

American Gas *Association* MONTHLY

Far-Sighted Postwar Program

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Packaged Kitchens for X-Day

•

Utility Jobs for Servicemen

•

Paging Aladdin and His Lamp

•

A New Principle in Furnaces


October



1944

VOLUME XXVI NUMBER 10



...This is the house that Gas  runs!

TODAY, in the laboratories of the Gas industry—the knowledge and experience of skilled technicians are working to bring you new miracles of better living... All of them made possible through the magic of Gas...the tiny blue flame that *cools as well as heats*.

RIGHT NOW, Gas speeds war production. Use it wisely. But tomorrow, it will transform your home from attic to cellar...make it a happier, healthier, more comfortable place to live. Isn't that worth saving for ...with every War Bond you can buy? **AMERICAN GAS ASSOCIATION**

GAS

**THE MAGIC FLAME THAT WILL
 BRIGHTEN YOUR FUTURE**



CONTENTS FOR OCTOBER 1944



There is no gainsaying the fact that this issue has a theme. Not by design but by accidental timing, no less than nine major articles deal with the currently absorbing topic of postwar plans. They aren't crystal ball stuff either but mostly down-to-earth progress reports on significant projects or new ideas for early realization. . . . The lead-off article announces a vigorous far-reaching program to implement gas postwar plans which deserves the whole-hearted support of all elements of our industry. If it is adopted, industry fundamentals on a broad scale will be subjected to searching analysis. It will mean vastly greater research, enlarged national advertising and more general promotion—all prerequisites of a healthy industry. . . . The postwar committee itself, through its energetic chairman, Alex. Beebee, brings the industry up-to-date on its accomplishments and announces community of thought with the appliance manufacturers. . . . Vin Potter follows with the first extensive published explanation of the industry's widely heralded coordinated kitchen activity. Mr. Senyard presents a major responsibility—jobs for servicemen, and Bob Ginna tears to shreds some of the more fantastic electric pretensions.

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THE GAS INDUSTRY IN BRITAIN—Huge steel pipes ranging from 48 to 84 inches in diameter convey the gas from process to process and finally to the gas holders. Another striking photograph by the British Council.



JAMES M. BEALL, *Editor*

POSTWAR PLAN

... Far-Sighted Program to Promote Gas Industry

IN a forward-looking move of a scope unprecedented in the gas industry, the Executive Board of the American Gas Association at a meeting in New York, September 13, approved and authorized presentation of a plan designed to carry out the recommendations of the A. G. A. Postwar Planning Committee as to research, national advertising and general promotional effort.

The plan calls for an expenditure for this three-pronged program of a total of \$1,400,000 per year for a three-year period. This represents an additional appropriation of one million dollars per year, as it includes the present \$400,000 national advertising fund. The new funds will be raised by subscription from local gas companies and will be in addition to those provided for present industry activities.

Designed to place the gas industry in a strong position to retain and enlarge its business in the postwar world, the program is the most complete and progressive yet offered to the industry. Taking the gas industry's future in its own hands, the plan envisions greatly enlarged fundamental and applied research programs over and above the present record appropriations in this field. It also provides for a substantial increase in national advertising and a full-fledged general promotional effort.

In making its recommendations to the Executive Board, the committee which drafted the plan, headed by President Ernest R. Acker, pointed out that the future of the industry depends to a large extent upon the initiative, intelligence and effort which the industry exerts in its own behalf.

To quote from the committee's report supporting its recommendations:

"Rising costs and aggressive competition have created problems which require immediate and effective action. The industry must unite in a determined effort to improve the economics of its operations and to promote its business so that the possibilities of gas service may be realized to the

fullest extent and the position of the gas industry may be strengthened as an important factor in our social and industrial structure. Such action on the part of the industry will not only preserve and extend its markets but will have a direct bearing on the ability of the industry to attract new capital on more favorable terms in the future than have prevailed in the recent past.

"It is obvious that financial interests are attracted by the securities of those industries which show a progressive spirit and which continually safeguard their future through substantial expenditures for research and aggressive promotional effort. It is essential, therefore, that the gas industry in its own self-interest demonstrate its faith in the future of its business by appropriating adequate funds for research and promotional development.

"The present position and future needs of the industry have been ably and comprehensively analyzed by the Association's Postwar Planning Committee which has presented its findings in a series of reports already distributed to the industry. The postwar committee is continuing its studies but its Report No. 3 issued in April 1944, submitted a summary of its work to date with 'Recommendations to the Gas Industry.'

"The recommendations are clear cut and challenging. They are based on the most thorough and authoritative study of the gas industry and its problems that has been made in its entire history. The conclusions represent the thinking of the most highly qualified men available in the industry, and have been checked and accepted by a large number of the industry's most able executives. The recommendations of the postwar committee form the basis for the plan."

Details of the entire plan will be outlined by President Acker at the Association's annual meeting, October 5, and thereafter will be distributed to the gas industry.

Postwar Developments...Summary of Gas Industry's Aggressive Plans for Peace



A. M. Beebe

AS a result of two years of study, our committee has now reached a position where definite thinking has crystallized.

The industry has already received copies of our various basic

studies, as follows:

- (a) Report 1—"Postwar Purchasing Power and Potential Markets." September 1943.
- (b) Report 2—"Competitive Factors Affecting Realization of Potential Markets." December 1943.
- (c) Interim Report March 1944—"Postwar Purchasing Power and Potential Markets."
- (d) Report 3—"Recommendations to the Gas Industry." April 1944.
- (e) Report 4—"Engineering and Economic Aspects of Our Own Ability To Achieve Markets." (Economics of Mfg. Gas Sales) April 1944.
- (f) Report 5—"Results of Survey of Postwar Appliance Needs."

The above reports have been well received and have created a great deal of activity and discussion as well as action. Further developments of the above basic studies have been prepared as follows:

Present Status of Coordinated Kitchen Program. C. V. Sorenson and H. V. Potter. (See Mr. Potter's articles starting on page 387.)

Comments on Electric Competitive Situation. R. E. Ginna. (See Mr. Ginna's article starting on page 393.)

Summary of Engineering Studies.* Hall Henry.

Studies that are under way and that will be released to the industry as soon as they are completed are as follows:

- (a) Economics of the House Heating Load.
- (b) Studies Relating to the Development of Production and Distribution Economics To Meet Postwar Conditions.

* To be covered in a later issue of the A. G. A. MONTHLY.

By A. M. BEEBEE

Chairman, A. G. A. Postwar Planning Committee. General Superintendent, Gas Department, Rochester Gas & Electric Corp.

- (c) Development of a Research Program To Satisfy the Postwar Conditions.
- (d) Economics of Natural Gas Sales.
- (e) Reports on Other Related Studies.

Naturally our committee is very anxious that Report 3—"Recommendations to the Gas Industry" be brought to the attention of all phases of our industry, since it covers a well-rounded program for united industry effort to solve the problems that lie before us. In support of this effort it is indeed heartening and gratifying to call attention to the complimentary and whole-hearted support given in the Report of the Postwar Committee of the Association of Gas Appliance and Equipment Manufacturers. To quote from the introduction to that report:

"Splendid progress has been made by A. M. Beebe and his various Postwar Planning Committees. Having reviewed the four reports compiled by and under the able supervision of Hall M. Henry, R. E. Ginna, R. J. Rutherford, and C. V. Sorenson, our committee is convinced that the work of the A. G. A. Postwar Planning Committees will have far-reaching beneficial effects if fully understood, appreciated and applied to the gas industry. We know of no other association that is providing its members with as complete, comprehensive, readily applicable analyses of postwar markets and purchasing power.

"The collection, compilation and publication of these data represent no mean accomplishment and are worthy of the best efforts of highly trained specialists in the field of market research and analysis. The value of such effort cannot be measured in dollars and cents, nor the benefits at this period forecast, but the industry should be grateful for the basic studies on which individual company planning and action can be based.

"The reports and recommendations have been studied by the Postwar Planning Subcommittees of each of the product divisions of the A.G.A.E.M."

There follow comments and supporting discussion emphasizing those points in the A. G. A. postwar program which are considered most important from the manufacturer's viewpoint. For this valuable and significant material, the reader is referred to the complete A.G.A.E.M. report which is being printed by that organization for distribution to the gas industry. It is urgently recommended for your careful study.

With such community of thought and cooperative action between the A. G. A. and the A.G.A.E.M., as indicated by these reports, great forward strides will be achieved.

There has been another development that is most significant, which is an outgrowth of our Report 3 (Recommendations to the Gas Industry), together with some important influences and thinking within our industry—particularly on the part of the president of the American Gas Association, Ernest R. Acker. If you are not already familiar with the proposed program for "Enlarged Research and Promotional Development in the Gas Industry," which the American Gas Association is now considering, you are urged to study it. This you will find one of the most outstanding programs of progress that has ever been considered by our industry and naturally our committee urgently asks your support in putting into effect the program when finally developed. Details of the proposed program will be laid before the industry in the very near future.

As a result of all the previously outlined studies, certain developments have taken place which should be here recorded and emphasized, since they are most important, and the significance should be appreciated by the industry, as follows:

- (a) Objective of Coordinated Kitchen Program

Our industry does not need to be told again of the importance of our domestic

gas load. It does not need to be told how formidable the competitive threat to that load is and the reasons for it, which have been previously described in detail in Report 2. As a result, one of the first programs recommended by our committee and adopted by the Association was the "Coordinated Kitchen Program." The wave of acceptance of this program has been most heartening and our thanks are due C. V. Sorenson and his company (Northern Indiana Public Service Company) for allowing him to spend so much time in piloting this activity until a permanent director could be found. Here again we have been fortunate in securing the services of Vinton Potter who, together with Mr. Sorenson's most excellent preliminary direction, assures success of this important activity. These two men have demonstrated splendid ability to handle this program.

(b) **Why Emphasis Must Be on the Gas Range and Kitchen Ventilation While Supporting Other Loads**

At first it may appear that our Postwar Planning Committee thinking and our Coordinated Kitchen Program give too much emphasis to the range and not enough to other desirable services using gas. Therefore, perhaps a few reasons for our program will help clarify the situation.

1. All our postwar surveys show that an alarming percentage of our existing customers would buy an electric range the next time they were to purchase a range. This impression has not been born of experience but by what they have been led to believe. Surveys show that this preference is because they believe the electric kitchen to be cleaner and cooler. Surveys conducted among those who have used both fuels do not show such a high acceptance of fuels other than gas. Apparently the recognized superiority of cooking performance and economy of a gas range outweigh the imagined benefits of

cleanliness and coolness when backed by practical experience.

2. Surveys show also that a tremendous amount of home construction is going to take place in the immediate postwar period. Unless we raise a question mark in the mind of the American housewife on the superiority of electric cookery as to cleanliness and coolness, we may wake up and find a "fashion" started in postwar construction that will be most difficult to back up and counteract.

3. Studies show that the soil in kitchens is not from the fuel but from the oils and fats distilled from the food in the cooking operation. High temperature cooking and faster rates of cooking accelerate these problems, while low temperatures and slower cooking reduce them. Because gas has larger quantities of heat available, and is a cheap form of fuel, there has been a tendency for our customers to use high temperatures to gain speed. At normal room temperatures oils and fatty vapors distilled from the food do not remain in the vapor state. Kitchen walls are relatively cold to the vapors which condense on them, acting as a collector of lint and grime and accounting for the soil in the kitchen.

The apparent cleanliness of the electric range is not the fuel but the type of cooking the customer has been forced to adopt. Low temperatures and slow rates of cooking can be done with gas as well as with electricity, but even here, in the modern home of tomorrow (small, compact and insulated) if absolute cleanliness is to prevail, kitchen ventilation of these oils and odors is important, irrespective of the fuel used. Here the gas range has a distinct advantage, since the warm products of combustion caught at the source along with the cooking oils and greases, can become the vehicle for their elimination without condensation. With fuels other than gas, the condensation of these fats and oils

under many conditions might create undesirable deposits in a ventilating system. Furthermore, catching these odors at the source, which with a gas range is easy, involves a minimum of warm air discharged from the house, which is necessary, to consider if economical home heating is to result, since all warm air discharged means cold air drawn in from somewhere else.

Thus we are best able to render a kitchen that is cleaner and cooler. This is important since we must not be on the defensive in the kitchen. While it is admitted that a gas range excels in economy and performance, if installed properly, it can also excel in providing a *clean, cool, odorless kitchen*.

4. **Using Or Eliminating Heat As Desired by the Customer**

Occupants of the modern home of tomorrow would like to enjoy the benefits of automatic house heating with gas.

During all cooking operations heat and water vapor are given off from the food, irrespective of the fuel used. Furthermore, a large proportion of the products of combustion of gas consist of water vapor as well as heat which may or may not be desired in the home, depending on the time of year. During cold weather these vapors when not contaminated with objectionable odors and greases are usually desirable in the kitchen because they help to heat and humidify the home. During warm months and especially in the canning season they are decidedly not wanted in the kitchen or any other place and the desirability of eliminating them by kitchen control is obvious. When we analyze the cooking and baking processes in detail, the importance of this control to kitchen cleanliness is apparent.

In order to make gas house heating more economical there are times, especially in cooler months, when it may be desirable



Meeting of the Executive Board of the American Gas Association September 13 at which postwar gas industry research and promotional plans were reviewed. Seated, left to right: Marcy L. Sperry, R. G. Barnett, Alexander Forward, President Ernest R. Acker, Vice-President J. French Robinson, D. A. Hulcy, Walter C. Beckjord and George S. Hawley. Standing: K. R. Boyes, E. P. Noppel, Charles A. Tattersall, Harry K. Wrench, John W. Batten, J. W. West, Jr., E. J. Tucker, F. M. Banks, J. H. Warden, A. M. Beebe, R. M. Conner, D. W. Harris, H. Carl Wolf, H. Leigh Whitelaw, E. J. Boothby and H. R. Cook, Jr.

to have the heat used in cooking perform the extra service of heating and humidifying the air in the home. Such a method can be frequently utilized since there are many cooking operations that do not produce objectionable vapors, such as baking potatoes, boiling eggs, baking cakes, etc. In these cases only heat and water vapor are given off.

Calculations show that the presence of a gas range in the kitchen rather than other means of automatic cooking will result in substantial economies that will help the customer achieve the comfort and convenience of automatic gas heating. These economies of the gas range include not only the double use of heat as outlined above, but, due to the low cost of gas for cooking and the fact that the gas range uses up the first steps of the block gas rate, customers who heat their homes with gas are enabled to enjoy fully the lower rate classification for extended use of gas. Thus "something new has been added" as to why a gas range should be included in the modern postwar home.

Here again gas can perform a superior

service which is under the control of the customer by a simple flick of the finger, which discharges the products into the kitchen when wanted, or into a concealed flue when cooking odors are involved or when heat is not wanted.

5. Research and developments (some of which are of a startling nature) on the problems of proper kitchen ventilation are already under way. It may take some time before final details are worked out. However, in the meantime there has been developed a means of kitchen ventilation that is capable of adaptation to present range models—using existing available materials—that does not involve other facilities in the kitchen and which is also adaptable to modernization of old kitchens as well as to new construction. This development will accomplish substantially all of the objectives of a kitchen ventilation program. While it is true that later research and development may improve on it, it does mean that such service can be available in the immediate postwar period, so that we can begin to talk about it.

6. Our coordinated kitchen program

which brings in with it allied manufacturers gives us a vehicle for strengthening and broadening our sales outlets and advertising power. In addition, the ability of appliances to fit one with the other should enable us to meet all the advantages that competing fuels may claim. Thus we are in a position to offer a service to our customers that is unexcelled by any other fuel and we can become aggressive rather than defensive in the kitchen. The tying together of disposal units, dish washers, and other electrical appliances in our program requires copious amounts of hot water which we are in a position to provide best.

7. While our program has been directed at the range, it must be remembered that this is the focal point of attack. Both gas and electric rate structures are such that once having secured the range, other services can be more economically considered. Our thinking in support of the range is so as to assure the other services of water heating, refrigeration and house heating being "grooved" for gas. Therefore, while our program may appear to emphasize the range it is the combined picture on which we are working.

8. Therefore, we feel it is important that the National Advertising be geared in the direction of raising a question in the mind of the American housewife who feels that other fuels may be able to give her a cleaner, cooler kitchen, and to begin to tell the story of our ability to provide a kitchen which is "Cooler in Summer—Heat-Saving in Winter and Cleaner the Year Round" or in a word—"THE COMFORT-CONDITIONED GAS KITCHEN."

(c) Recommendations on Sales Policies

The need of increasing contacts and sales outlets to the customer as well as developing sales allies to meet the competitive sales program of competing fuels has been emphasized in all our studies and is again stressed in the A.G.A.E.M. Postwar Report. To aid in this direction a program of sales policies has been developed by the Residential Section and is warmly endorsed by the Postwar Committee. These recommendations will soon be released and it is urged that they be given most careful study by the industry.

(d) Cooperation on Research with Coal Industry

As a result of our thinking that the manufactured gas industry is the best means for conveying the energy in coal to the customer in ashless and convenient form, we are glad to report that real progress has started and that we should be in a position soon to report definite progress that should materially strengthen the programs of these two powerful industries.

Conclusion

The above recitation of study and progress is most heartening and should assure our industry of meeting successfully competitive conditions in the postwar period.

New Features for Postwar Appliances Developed by A.G.A. Engineers

TWO revolutionary new features in the use of gas have been developed experimentally by the American Gas Association Testing Laboratories in Cleveland, Ohio.

Single Point Automatic Ignition

For the first time in history, man is able to make a flame travel instantaneously downward, in circles, around corners, and in virtually any direction. The most immediate practical application of this is its use in ignition of burners on gas ranges.

This will mean "matchless" ignition for the oven and broiler which is achieved through a new ignition tube from a single standing pilot on the top section to oven and broiler burners. Top burners will be lighted automatically from the pilot, as usual.

The new ignition tube eliminates the use of as many as four standing pilots necessary on some models for automatic ignition, providing greater economy, freedom from heat, and more convenience. It will provide greater freedom of design in placement of oven and broiler, eliminating the necessity of both sharing a common pilot in many instances.

Development has been completed and is ready for consideration by manufacturers as a definite gas range feature. Some have indicated they will incorporate this feature in the postwar range as soon as possible.

New Type Burner Termed the 100% Primary Air Burner

This is a completely new type of burner, producing a new form of flame which burns when completely enclosed. In other words, it is capable of burning in the products of its own combustion and therefore needs no additional air.

This flame burns brighter, sharp, hard and blue. It is considerably shorter than the conventional flame. These characteristics possibly may be developed to the point where burner and grates can be combined, serving as a support for utensils and permitting smooth top-section range styling.

Advantages include greater heating speeds and efficiency, better control of heat, greater freedom of design for cleanliness and appearance, greater compactness or utilization of space.

Development is still in the experimental stage and practical application will require solution of many manufacturing and engineering problems. Many of the potentialities of the new burner will apply to water heaters and other gas equipment as well as ranges.

Kitchens for X-Day... Gas Industry's Plan to Promote Coordinated Package Units

OUR industry has a right to be proud of the work that is being done in preparation for the battle we must face in the postwar era. Not only have plans been laid for the realization of a greater share of this business, but many of the plans are now being interpreted into action. A recent survey by *Printer's Ink* magazine of 26 national associations covering a wide range of business reveals that only 13 had even appointed a postwar

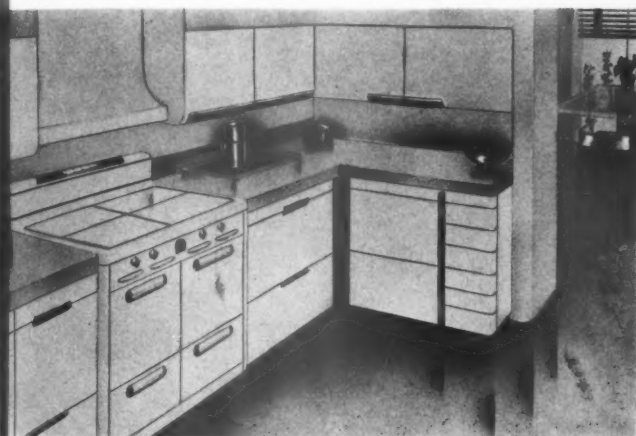
By H. VINTON POTTER

Director, Coordinated Kitchen Program, American Gas Association

line of equipment or providing our companies with unified lines of merchandise, nor do we have as many large advertisers to impress our story upon those we serve. Consequently, the electric industry can offer its utilities and dealers unified merchandising

Committee says "the major attack of competing fuels will be on the range as the result of the thinking that 'as goes the range, so will go other major loads.'"

The electric industry recognizes that the electric range is the wedge by which these loads may be won over and that once having secured the cooking load away from gas (the beachhead so to speak) it must immediately gain other loads such as offpeak water



Geo. D. Roper Corp.



The Peoples Gas Light & Coke Co.

Kitchens which are immediate postwar possibilities. These units as well as those on the following pages are the ideas of several designers and are not necessarily associated with the A. G. A. coordinated kitchen program

planning committee and of these only five had submitted any kind of preliminary report. The American Gas Association was one of these five.

In its report to the industry the Postwar Planning Committee headed by Alexander M. Beebe made a total of 31 recommendations and 6 of these are being served through the activities of the Coordinated Kitchen Planning Committee. You may well ask what is the Coordinated Kitchen Program. First, let me say that in the gas industry we have no General Electric, Westinghouse, or General Motors organization manufacturing a complete

plans and encourage a customer to expect the delivery of a complete kitchen in a single package installation by a single dealer and financed on a single lease.

The kitchen will be an increasingly important place in the home because more women than ever will find themselves deprived of outside assistance and will, therefore, expect more efficiency and beauty in their kitchen of tomorrow. We have waited too long already to tell how well gas can perform in this kitchen of tomorrow, but we know in our own hearts that gas furnishes a superior service and it is in the kitchen that the battleground will be postwar. As the Postwar Planning

heating to restore its economic earning. All of this emphasizes the focal importance of the gas cooking load and its immediate coordination with other domestic gas uses.

For the purposes of this program we are considering our kitchens to include a range, refrigerator, sink and necessary cabinets, realizing that we must keep the program practical. As a corollary to our success in promoting the idea, however, manufacturers of water heaters and house heating equipment will find prosperity too.

Our first job has been to make sure that manufacturers are planning smart new appliances for you to sell. Next we must make sure that manufacturers

Presented at Pacific Coast Gas Association's Annual Meeting, Los Angeles, Calif., Sept. 13-14, 1944.

of cabinets not only are willing and eager to work with us in our program but that they will coordinate their efforts with ours in the interests of simplifying our task. Next we must acquire the friendly interest of related manufacturers such as glass, plastics, steel, linoleum, etc.

Along with all this we must make sure that the potentialities of gas are recognized by those who are molding public opinion and shaping the world to come, such as industrial designers, architects, builders, etc. All these factors must be woven together. We find that we too can draw pretty pictures and make glamorous combinations which will assure for us the active interest of home planners in the building years ahead.

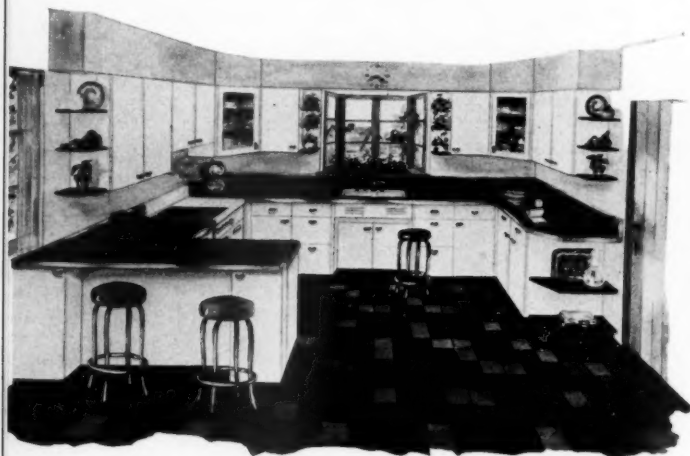
While many folks in their over-

by gas, we can conclude that our industry has an immediate market for $8\frac{1}{2}$ to 9 million ranges made up of families formed during the war, those that will be formed immediately after the war, plus those ranges which have worn out during the war, plus all the accumulated replacements that should have been taken care of when merchandise was still available. True it is that we will not sell a coordinated kitchen to everyone of these 9 million prospects, but it has never done an American any harm to want to own a Packard or Cadillac even though they finally bought a Ford.

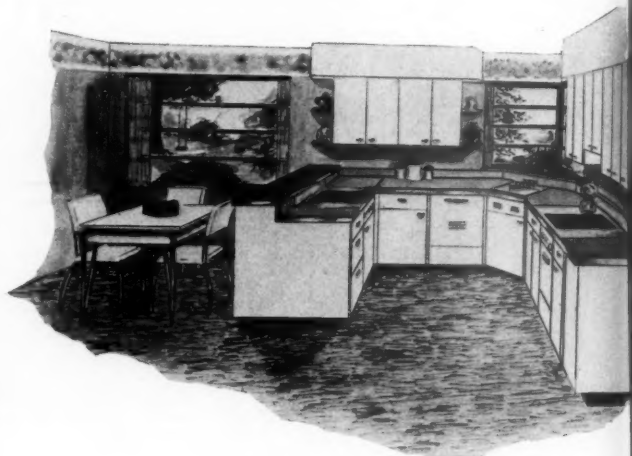
The fact that we can offer the finest in complete kitchens will keep many of our prospects from being won over by competition which has successfully sold the idea that if anything wonder-

three phases: one, the immediate postwar phase where manufacturers will offer 1942 models to satisfy the urgent demand; the second phase will be the period one to three years later when the really new appliances hit the market, and the third phase which may coincide with either of the first two will be the introduction of the completely ventilated kitchen. Just because we will have pre-war models available in the immediate postwar era does not mean that we still must wait for new equipment before we glamorize our service.

The second period will bring to realization many new revelations both in gas appliance and in cabinet and equipment design. The homemaker's habits will be analyzed and appliances designed for the most efficient



St. Charles Mfg. Co.



optimism have predicted a million homes a year for the ten years immediately after the war, more sober thought recognizes the fact that materials will be hard to get for the first two or three years and that building will gradually increase to the point of a million homes a year until approximately ten million dwellings have been made. Our program, however, does not have to wait for mass home building to start, for we still have a big job as yet undone.

A recent survey shows an immediate postwar market for approximately 17 million ranges of all types. As half of these prospects are in areas served

ful has developed it will be done electrically. We know this isn't true but our job is to let others in on the well-kept secret. An impartial report issued by the Rochester Gas & Electric Company over the signature of H. J. Klumb says in part:

A good gas range will do a better baking job than a good electric range. Maybe I lean a little toward gas even though brought up on an electrical diet because we sell gas as well as electricity and believe in both. Our tests have shown consistently better results with gas ranges than with electric and I believe the reason is better-controlled heat in the working zones.

In our Coordinated Kitchen Planning Program we think in terms of

operation and yet at the same time blended with a homey atmosphere.

As for ventilation in their kitchens—a very interesting subject—we in the gas industry feel that we can offer a completely ventilated kitchen that will be cool in summer, warm in winter and comfortable the year-around. Right now the American Gas Association Laboratories in Cleveland are working out handbook data that will be made available to all manufacturers. Upon its completion it will point the way towards the revolutionized gas kitchen of the future.

Four basic needs prompt our interest in different phases of our research.

Number one, the tendency of homes of smaller cubage; two, the almost universal tendency towards insulated homes; three, the use of pastel colors in decorations—walls, upholstery, etc.; and number four, the tendency towards conditioned atmosphere and the use of forced warm air for heating. Cooking odors and greasy vapors certainly cannot be tolerated in the home of the future, nor can old methods of kitchen ventilation be used with any success.

The gas industry is attacking this problem from an entirely different angle, seeking to surround the appliance with a blanket of air which will break away the cooking odors and vapors at their source and, by doing the job more efficiently, and at the same time reducing the need for such ventilation to only those periods the

remodeling—a tremendous market to work on right away.

It is not the plan of your kitchen planning committee to offer a set merchandising program. We realize fully that no one plan can be worked with equally good results in the north, south, east, and west. It has, therefore, been our thought from the start that we should smooth the way for local action by seeing that gas manufacturers here work together and that cabinet manufacturers here use their ingenuity and resourcefulness to provide you cabinets of a right design coordinated with our gas appliance and distributed through dealers of our select opinion.

We can depend on local action and the fact that manufacturers of glass, plastics, linoleum, steel, etc., realize

vey, 90% of the utilities say that they will actively promote and advertise the coordinated gas kitchen. Others approximately 40%, will sell the complete kitchen themselves. Some will work up the complete plan for a modern kitchen then turn it over to a local cooperating dealer who will sell the cabinets, linoleum, and appliances—buying the appliances at a dealer's price from the utility.

It is our hope that the National Copy Committee will decide shortly after the first of the year to start showing beautiful gas kitchens—so beautiful in fact that women will start substituting our pictures for those they already have and thereby start the trend back to the thinking that gas kitchens can be beautiful too. We realize that we cannot be content with furnishing



St. Charles Mfg. Co.



Geo. D. Roper Corp.

equipment is in operation. This problem is common to all fuels but the gas industry is approaching it from the most reasonable angle and when tests are completed we will be able to offer you a new argument for gas service that will win you many friends. We are not talking about venting appliances, we are talking about conditioning the air in the kitchen.

In the postwar building boom we must make sure that contractors and builders recognize this problem and provide for it, but we must not overlook the remodeling boom that will start as soon as the war is over. Approximately six million homes need

how big a potential market is offered by the gas industry to influence them to favor us in their plans rather than carry the torch for the electric industry which unfortunately has been successful in associating with their service an air of modernity and perfection. By offering a utility good gas appliances, making it possible for them to work with dealers who will follow through, and at the same time guarding our national interest we feel our value will be best realized. Some utilities will be interested in providing the spark that will make all communities conscious of the all-gas kitchen.

In the recent A. G. A. all-gas sur-

a kitchen that is only as good as an electrical kitchen—we must furnish a better one. We know that we can furnish better kitchens, what with superior appliances plus the ingenuity of many large cabinet manufacturers who have been left out of the electrical industry's plans—plus the enthusiasm of local gas companies who realize that in the kitchen is the battleground for future service in the home—plus the completely ventilated kitchen that will lift us above all competition. We know that our program is not only just as good, but far better.

In conclusion let me say our potential problems in the gas industry are to:

1. Recognize the superiority of gas over all forms of competitive service.
2. Plug CP so that our service will be used through the medium of superior appliances.
3. Recognize and instill in our customer's mind the all-gas theme.
4. Surround our kitchen appliances with good cabinets, attractively arranged with a sparkle and charm that can be interpreted by the use of glass and the color that can be blended in through the use of attractive linoleum and the arrangements of plants and flowers.
5. Keep our national advertising plugging away on a theme that gas kitchens are modern and ahead of competition.
6. Provide a local program that will show

people the best that can be had by sales floors, displays and through dealer ties and then proceed to make everyone want this ultra-gas kitchen even though they can only afford to buy part of it at a time.

7. Always keep our eye on the improvement of our thinking and design so that gas will be more than the thing of the moment and will become the service of the future as well—then
8. We can squeeze the last drop out of our potential market and not only hold what we now have but can make substantial inroads on present competition and at the same time through our LP associates capture a substantial part of the rural market.

drilled in April 1944 near Teplovka village is turning out 200,000 cubic metres of gas daily. The output of a well near the village of Kurdyuma, from which gas issues at a pressure of 50 Atmospheres, is almost as great as in Teplovka.

Saratov's industry is gradually discarding hard and liquid fuel altogether. The Elshanka wells alone made it possible to save 250,000 tons of coal. In 1943 the use of gas enabled Saratov's bakeries to save 50,000 cubic metres of wood and released 300 workers, 8 tram cars, 6 lorries and 34 horses. Altogether the bakery trust reduced expenditure by seven million roubles.

The city's very appearance is changing. Clouds of smoke no longer shroud the factories, streets are no longer coated with soot and the piles of ashes have vanished from the factory yards. Gas furnaces have been installed in some dwellings and office buildings. The use of cheap gas fuel will make further increase of production possible.

Natural Gas and War Transform Russian Industry

By ALEXANDER YAKOVLEV
(*The Gas Times*, London)

FORTY years ago, when a well was being dug on the Melnikov farm near the village of Dergachi, Saratov Region, a stream of gas gushed forth with terrific force. The gas was so suffocating that all the peasants had to leave the area. The enterprising farmer then invited a geologist engineer, who discovered the gas was methane and could be used for industrial purposes. It was not long before Melnikov built a brick factory on the farm.

Under Soviet rule natural resources were not discovered by chance, but were found by geological reconnaissance carried out under a fixed government plan. Large scale geological prospecting for oil and gas began all along the Volga. Several gas wells were found 30 to 60 miles from Saratov. Natural gas was increasingly used after the outbreak of war.

Stalingrad Spurred Gas Search

In the autumn of 1942 during the battle of Stalingrad the war factories of Saratov were called upon to increase their output. But the huge army traffic used up the supply of fuel. It was then that the use of natural gas was greatly increased.

The biggest gas deposits were found in the village of Elshanka, 12 miles from Saratov. In 27 days a pipeline was laid from the village to the city. It was a real achievement. The people of Saratov practically ransacked all storehouses and factory yards in search of pipes. They made pipes out of thick sheet iron, and work went on day and night. Soon the Saratov power plant and dozens of factories were using natural gas as fuel, and the city's war industry immediately revived.

German planes began to attack Saratov, and the front line drew nearer. But the

men and women of Saratov worked more enthusiastically than ever before.

After the Germans had been routed at Stalingrad and the situation became less tense, an ever increasing number of factories switched over to gas. Seventeen wells were drilled near the villages of Elshanka, Teplovka and Kurdyuma. A well

New Director

T WILSON VAN MIDDLESWORTH has been elected a director of Public Service Corporation of New Jersey to fill a vacancy on the board occasioned by the death of George Barker.

Mr. Van Middlesworth has been with Public Service and predecessor companies 42 years and has been treasurer since 1917.

American Gas Association Annual Meeting

Engineering Societies Building, 29 West 39th Street, New York
Thursday, October 5, 1944, 10 A.M.

Opening Remarks by the President

Report of the Treasurer—J. L. Llewellyn

Report of General Nominating Committee—E. G. Boyer, Chairman

Election of Officers

Election of Natural Gas Department Managing Committee, Chairman Robinson presiding

Election of Manufactured Gas Department Managing Committee, Chairman Hawley presiding

Award of American Gas Association Meritorious Service Medal

A Message from the War Production Board—Edward Falck, Director of the Office of War Utilities

An Industry Program in Research, Advertising and Promotion—Ernest R. Acker, President A. G. A. and Chairman, Committee on Gas Industry Promotional Development

12 Noon—Executive Session (Company delegates only)



Jobs for Servicemen ... a Vital Postwar Problem

This is the second in a series of reports under preparation by the postwar planning committee of the A. G. A. Southwest Personnel Conference. The initial report on this increasingly urgent problem appeared in the July-August "Monthly." The present installment, containing the views of an important segment of the industry, was presented to the Southwest conference on August 29. The planning committee is composed of W. H. Senyard, Louisiana Power & Light Co., New Orleans, chairman; W. G. Wiegel, Lone Star Gas Co., Dallas; E. A. Werner, Gulf States Utilities Co., Baton Rouge; and P. B. Ezell, United Gas Corporation.

IN order to assist the gas industry in crystallizing plans and procedures for re-employment of returning servicemen, members of the Southwest Personnel Conference group were sent a questionnaire early in August. Replies were received from one-third of this group and, while this percentage may not be representative, a clear trend is indicated.

Of those answering, two-thirds stated their postwar personnel program was in the planning stage while one-third stated it had not been reduced to writing. Answers to the questions have been summarized as follows:

"Do you anticipate any trouble in placing war veterans in their old jobs?"

About 1/3 expected no trouble while the remainder gave the following as among the reasons that trouble is anticipated:

1. A few (some) will be partially disabled, others will qualify for more important jobs than the ones they left.
2. Disabilities, special training received in service, handling of employees now on payroll, failure of veterans to "settle down."
3. In some instances more maturity and training will make old jobs unsuitable. In some instances young employees will spend two to four years in service, a substantial number have become officers and received special training in the Service. Newly acquired skills may not be suitable to old jobs and cannot be utilized. Advanced age of the men will cause some problems.
4. Acquiring new skills and the taste of authority by those who have attained ranks out of proportion to

their previous civilian business status will very likely offer difficult problems in so far as suitable reinstatement is concerned.

"Briefly outline the points that, in your opinion, should be contained in a re-employment plan."

The following answers are representative:

1. Try to foresee and list every combination of circumstances, and prepare answer to each in advance.
2. Careful attention to (1) Legal requirements; (2) Fulfillment of humanitarian and social obligations of the companies as corporations and employees as individuals.
3. It is very important that every returning soldier be treated as an individual case. If re-adjustment is necessary, relieve if possible any fear or uncertainty in the lad's mind as to job security and his place with the company. He must not feel that he is being shelved or by-passed.
4. Offer re-employment . . . regardless. Continue employment after one year, if at all possible. Help overcome handicaps, if any, and fit the man in a job he can perform. Advise and assist in Federal benefits, etc.
5. Any reinstatement plan with reference to those returning from the armed forces should be centered, whenever possible and practical, around the proper placement of the individual in so far as new skills

and ability to assume responsibility and authority are concerned.

The majority of those answering the questionnaire believed that a Postwar Employment Plan should be reduced to writing. It is to be noted, however, that there was some slight difference of opinion on this point.

"Do you think returning servicemen should be given a manual prepared by the company especially for the returned service employee and designed to re-orient him in the organization, at the same time summarizing or tabulating his benefits under the 'G. I. Bill of Rights'?"

The majority thought that a company manual would not be desirable but that some other type of booklet prepared by an outside agency explaining a veteran's rights and benefits would be desirable.

"List any other thoughts on Postwar Personnel Problems that you think would be interesting and helpful"

The following suggestions have been made:

1. A great many Postwar Personnel Problems can be handled very successfully before the veteran returns to his job, more especially those boys wounded in action or discharged for other physical reasons. Advance notice is usually received by relatives or friends of boys that have been wounded. The companies can take this opportunity to

immediately write this man and prepare him for the return to his old job, or such work that he will be qualified to perform.

It appears that the demobilization of our army will be somewhat gradual which will give us some time to reinstate our men as they return. Although the total elapsed time will not be as long as their leaving, I feel that we can reinstate them with no more trouble than they were released.

- The major problem in our company will be the young engineers who left our services as a trainee or student and is now a Captain or Major. He will be from 2 to 4 years older in age and probably 5 to 10 years older in experience. His job as he returns to it will be rather dull and perhaps uninteresting. Therefore, it will be a problem to keep him satisfied through the transition period. Many of them, I feel, will be restless. If we can keep them occupied until they have their feet on the ground we will be greatly benefited by having these men in our employ.
2. In addition to considering returning servicemen in Postwar Personnel Problems, I believe employers will find it very much to their benefit to give serious consideration to the many problems which will arise concerning current personnel who will be "bumped" by the returning servicemen.
3. Advice and assistance to widow and family in securing Federal benefits where death or serious injury resulted to employee from military service.
4. General policies should be adopted so that individuals may be properly treated.
5. We think public utilities will be put under heavy pressure to employ veterans not former employees; and that utilities will be wise to have prepared in advance well considered policies in regard to such pressure.
6. Disposition of workers hired during the war period and displaced by returning veterans. Veterans returning with partial disabilities. Placing of veterans who have aged two to four years since entering service, who may have left junior jobs with

moderate salaries. During their service earned commissions of various ranks.

Company Surveys

Two companies reported that they are conducting surveys among the supervisory members of their organization to stimulate thinking on how each returning serviceman is going to be placed back on the job and what shifts and changes will be necessary. This procedure not only helps develop a plan but brings immediate and intermediate supervision into the planning and makes them realize their responsibilities in working out a satisfactory solution.

Personnel Planning Bibliography

Your committee wishes to direct attention to the following releases, clippings or publications:

- A. Associated Press news article which appeared August 21 quoted General Hershey, Director of Selective Service, as saying that "from one to two million" servicemen would be released from the armed forces on the surrender of Germany.
- B. An article entitled "Will Aid Industry Rehire Veterans" which appeared in the August 7, 1944, issue of the Journal of Commerce. This noteworthy release follows:

"A new service designed to aid industry in re-employing discharged war veterans has been instituted by the War Department, it was learned here today (August 6).

"Under the simple plan which is being tried out and which undoubtedly will be extended, soldiers, sailors and marines who are about to be discharged are asked at each demobilization point by whom they were last employed. A postcard is then sent to that employer from the demobilization center, saying, in effect, 'Private Joe Blank was honorably discharged as of this date.'

"The system has two distinct advantages:

"1. It protects the employer, who is required by law to re-employ former employees who have joined the armed forces provided that they apply for re-employment within forty days of their being discharged. It gives the employer the exact date of discharge and prevents the possibility of misunderstanding.

"2. In this period of manpower shortages it gives the employer a lead toward the employment of men whom he might not otherwise know were available.

"The service was conceived as an aid both to the discharged serviceman and to industry. Prior to inauguration of this service it was incumbent upon the serviceman to notify his employer that he had been discharged. Many failed to give such

notification within the time prescribed by law and there was then no obligation upon the employer to re-hire him.

"Whatever negotiations ensue between the discharged serviceman and the employer subsequent to notification of the man's discharge by the War Department are outside the purview of the War Department. The service stops with notification of the employer that one of his former employees has been discharged from service.

"The service is expected to be extremely helpful to large companies which are saving places to which military personnel may return. This is particularly true in view of employment ceilings recently ordered by the War Manpower Commission."

- C. Articles in the *Wall Street Journal* of August 14 and August 15, 1944, on the re-employment of veterans give a good summary of the veteran's rights and the employer's obligations.
- D. A pamphlet published by the Research and Review Service, Inc., Indianapolis, Indiana, entitled "A Handbook for the Veteran of World War II."
- E. Pamphlet of the Metropolitan Life Insurance Company designed for distribution to the returning serviceman entitled "What To Do About Your National Service Life Insurance."
- F. Pamphlet issued by the American Mutual Liability Insurance Company entitled "A Plan To Help You Employ Disabled Veterans and Other Handicapped Persons Productively and Safely."
- G. Special War Bulletin No. 10 of the California State Chamber of Commerce entitled "Employers' Responsibilities for Reemployment of Discharged War Veterans."
- H. A report of the National Industrial Conference Board, Inc., entitled "Employment of Handicapped Persons." This is Personnel Policy Study No. 63.
- I. Article that appeared in the June, 1944, issue of *Advertising and Selling* entitled "Will Veterans Want Their Old Jobs Back?"

In view of recent war developments, together with selective service predictions, it is the belief of your Postwar Planning Committee that member companies should continue to develop their postwar re-employment plans, and carry them beyond the planning stage, consistent with the individual companies policies and procedures.

Future reports will be made from time to time.

Gas Longevity

RICHARD DOUGHTY has been engineer and manager of the gas company at Barton-on-the-Humber, England, for one hundred and fifteen years.

The current possessor of that name, who has just retired after serving seventy-three years, succeeded his father who was manager for forty-two years.

Paging Aladdin's Lamp... *Statistical Commonsense Refutes Electric Postwar Claims*

By R. E. GINNA

*Rochester Gas and Electric Corp.,
Rochester, N. Y.*

THE press and the trade papers of the nation are full of the reports of this and that postwar planning group—all pointed to the possible business, economic and social levels of postwar America. This is a desirable and healthy sign and promises much for our welfare, even though many of the plans are obviously conflicting, fundamentally unsound because of far-fetched promises, and too conjectural. One hesitates, therefore, to expose the weakness in the plans of any group for fear of being misunderstood, and having the intention to be helpful misconstrued as a destructive or competitive act. But this is an age of facts and figures and if postwar plans are to be successfully carried out, they must be objectively based on proven performances of the past and adjusted for the future on the basis of tested theories of research and application.

Electric Postwar Plans

With such an introduction and apology we now direct ourselves to the postwar plans of the gas and electric utilities to increase their domestic loads. On all sides one hears and reads the claim of the electric industry that it will at least double its domestic consumption per customer in the first five postwar years. This is an impressive statement, and it has been picked up and repeated so many times in the press that it is now being accepted as a definite postwar objective for the electric utility industry, capable of being accomplished. No one would welcome its realization more than myself! The hope is generally accompanied by the explanation that the recessions in industrial war loads with coming of the peace will leave available large surplus generating capacity to take care of the demands imposed by new electric ranges and water heaters, and market estimates (rather than surveys) show

a tremendous accumulated consumer demand for such major domestic appliances.

That these complimentary factors will probably exist no one can deny. The trouble with the claim is that it does not take into account actual characteristics of the present annual domestic use per customer and the volume of major appliance sales necessary within 5 years to effect a 100% increase in the present average annual use. Before resorting to statis-

tical sleight-of-hand, it should be borne in mind that it is admitted there may be isolated areas where such an increase in domestic electric use may be obtained. But the exception does not prove the rule! This article attempts to consider the electric industry as a whole.

During the year 1943, the average domestic use per customer including rural sales for each geographic division of the nation was as shown in Table 1.

Based on a recent survey, conducted by the Electric Light and Power magazine, asking the electric utilities how many ranges, water heaters and refrigerators they ex-

Table 1*
DOMESTIC CUSTOMERS AND SALES INCLUDING RURAL

Geographic Division	Customers	Year 1943 Kw.h. Sales	Av. Use
New England	2,220,502	2,033,032,000	916
Middle Atlantic	6,859,987	6,252,025,000	911
South Atlantic	2,774,384	3,255,591,000	1,173
East North Central	6,657,177	7,648,474,000	1,149
East South Central	1,259,228	1,608,432,000	1,277
West North Central	2,581,343	2,670,143,000	1,034
West South Central	1,805,334	1,639,486,000	908
Mountain	818,858	1,124,736,000	1,374
Pacific	2,984,524	5,385,582,000	1,805
Totals	27,961,337	31,617,501,000	1,131

* Source—Edison Electric Institute.

This devastating analysis of the gas industry's postwar electric bugaboo is the work of a widely recognized student of fuel economics and an authority in the statistical field. Mr. Ginna has made many rate and competitive investigations both for his own company and for the American Gas Association. He is chairman of the Postwar Planning Committee's group studying electric competition and is also chairman of the Association's Committee on the Development and Use of Gas Industry Statistics.



Table 2
ESTIMATE OF YEAR V + 1 SALES

Geographic Division	Ranges	Refrigerators	Water Heaters	Total Units
New England	40,104	125,000	9,271	174,375
Middle Atlantic	66,284	261,111	15,756	343,151
South Atlantic	55,190	165,388	24,526	245,104
East North Central	114,709	283,040	45,855	443,604
East South Central	31,711	69,470	18,606	119,787
West North Central	42,972	179,499	22,717	245,188
West South Central	20,788	165,644	10,529	196,961
Mountain	16,016	39,403	10,798	66,217
Pacific	84,734	279,307	57,740	421,781
Totals	472,508	1,567,862	215,798	2,256,168
% of Total Units	20.9%	69.5%	9.6%	100.0%

pected to sell in the Year V + 1 (first postwar year), and after projecting the estimates of the reporting companies so as to attempt to cover all companies in the country, I arrive at the results shown in Table 2.

By using an estimated annual kwh. usage of 1,500 for a range; 3,000 for a water heater and 420 for a new refrigerator applied to the above V + 1 Sales, we arrive at the effect of such anticipated merchandise sales on the present average use per customer after the first year.

Table 3
ESTIMATED AVERAGE KWH. USE
PER CUSTOMER—YEAR V + 1

New England	979
Middle Atlantic	949
South Atlantic	1,255
East North Central	1,213
East South Central	1,383
West North Central	1,115
West South Central	981
Mountain	1,463
Pacific	1,944
Total (U. S.)	1,203

The above table demonstrates that the estimated Year V + 1 sales of ranges, water heaters and refrigerators would increase the national average domestic electric use from 1,131 Kwh. to only 1,203 Kwh. Since we are essentially concerned in determining how much of an effort is needed to double the present "use," one can readily compute that *it would take nearly 16 years even at the yearly rate of the estimated V + 1 annual sales volume of the three major appliances.*

To put it another way, the present national total sales to domestic electric customers, including rural business, amounts to approximately 31,617,501,000 Kwh. annually. At the

ratio of predicted V + 1 sales, (namely, 21% of the units to be ranges; 69% refrigerators, and 10% water heaters) it would require the following added appliances to produce an annual consumption equal to the present load.

Table 4
ESTIMATED ANNUAL APPLIANCE SALES TO EQUAL PRESENT
KWH. ANNUAL USE

7,418,376 Ranges	@ 1,500 Kwh.	= 11,128,000,000
24,615,433 Refrigerators	@ 420 "	= 10,338,000,000
3,388,029 Water Heaters	@ 3,000 "	= 10,164,000,000
Total Domestic Sales		31,630,000,000

Please note that the above relationship still holds to the reasonable V + 1 year estimates that for every 100 refrigerators, 30 ranges and 14 water heaters would be sold. Yes, the relationship holds but are the number of each appliances on the beam? I know I have rounded corners and jumped over the moon, but who hasn't? The point is that most anything can be proven statistically but not everything can be statistically proven. Yes, I know that if statisticians were laid end to end it would be a good thing!

Let's look at it another way. How many "all electric packages" (range, water heater and refrigerator) must be added in 5 years to double the present total domestic electric annual sales in Kwh.? Still assuming the annual Kwh. values at 1,500 for the range, 3,000 for the water heater, and 420 for the refrigerator, the answer is 1,285,000 "packages" each year for five years! Compare this with the estimated Year V + 1 sales of 472,508 ranges, 1,567,862 refrigerators

and 215,798 water heaters. And isn't the gas industry going to have anything to say!

I realize that I too have joined the ranks of those making various unwarranted assumptions but my alibi is that the picture would be worse than that already drawn and then I would be accused of things! Yet, it is obvious that for the electric industry to depend on range, water heater and refrigerator sales to double the present domestic use in the first five postwar years is really "wishing on a star," isn't it?

There is of course the lighting load, heating and air conditioning fans and blowers, television sets, extra radios, quick freezers, cold storage cabinets and many small appliances; truly a formidable list to help swell the postwar domestic electric use. But, such gains may be offset to

some extent by many (at least 40%) of the refrigerator sales being replacement units of greater efficiency, thereby reducing the customers' use.

Other factors not to be ignored will be the trend toward smaller homes, apartment house construction to rehabilitate older sections of the larger cities, and housing projects to replace the slum areas, all of which may tend to retard the effect upon consumption of new electric range and water heater installations.

All of the foregoing might seem like a statistical merry-go-round where figures have been tossed about in rather optimistic abandonment. The situation isn't quite as bad as all that, yet it is hoped that the above analyses will encourage more serious attempts to arrive at reasonable estimates of objectives ahead for the electric industry.

Such objectives should not and cannot disregard the existence of the gas industry. The Postwar Planning Committee of the American Gas Association has presented to the gas in-

dustry a vital program of considerable proportions with recommendations of a definite promotional character. These have been very favorably received by the executives of the gas industry and active steps are being taken to implement the industry's postwar plans.

This dissertation would not be complete without some indication of what the gas industry faces in postwar markets. A recent saturation survey by the Office of Civilian Requirements of the War Production Board reports the estimated number of appliances in households as shown below in Table 5.

It is claimed by WPB that more than two-thirds of the gas stoves are more than five years old. The gas water heater figures are in some doubt and it is urged that the gas utilities determine immediately how many automatic water heaters they really have on their mains. This information is vital and indicates the need for each company to know its own market conditions, because it is evident that considerable promotional attention should be given to the automatic gas water heater as it affords a definite gain in consumption, whereas the replacement of a gas range merely holds existing business. However, as repeatedly pointed out, the statement, "how goes the range, so will go the water heater," emphasizes the key part that the range plays in the kitchen picture.

No observations on the "gas versus electricity" problem in the domestic service field can well avoid some reference to the weight of the combination companies on the ability of either the gas or electric industry to reach their respective postwar sales objectives. The analysis in Table 6 of operating utilities with assets in ex-

Table 6

Number and Type of Utilities (over \$5,000,000 in assets)		Total Fixed Capital Amount	% of Total
<i>Straight Gas</i>			
Mft'd Gas	25	\$ 494,790,690	3.0%
Natural Gas	16	771,697,484	4.6
Mixed Gas	9	675,133,934	4.0
Sub-total	50	\$ 1,941,622,108	11.6
<i>Straight Electric</i>	82	5,341,170,024	31.7
<i>Combination Gas and Electric</i>	116	9,543,313,597*	56.7
Total	248	\$16,826,105,729	100.0%

* About 29% of this total is gas department's fixed capital.

cess of \$5,000,000 each reveals the relative magnitude of the two industries and the significant size of the combination companies.

From the above comparison, it should not be difficult to appreciate the importance of Recommendation 9 of the A. G. A. Postwar Planning Committee, wherein it is stated,

"Both the gas and electric industries are recognizing that there are definite fields wherein each service is complementary or best and that the combination of services can be to the interest of both the consumer and the utilities."

Now that it is definitely established that the ventilated gas range in American Gas Association's Coordinated Gas Kitchen is a postwar certainty, comfort-conditioned and clean gas kitchens will become a postwar reality for all to enjoy.

Such gas kitchens of tomorrow with their appropriate electrical features will utilize both services in their proper spheres to the advantage of both customers and utility investors and at the same time contribute to the fundamentally sound, vital and

most efficient use and conservation of the natural resources of the nation.

Mobile Wins National Security Award

FOR outstanding achievement in safeguarding its vital wartime gas service, the Mobile Gas Service Corporation, has been selected by the National Office of Civilian Defense and the Alabama State Defense Council to receive the National Security Award.

This award was presented by Fred Arn, executive director of the Office of Civilian Defense. In his remarks Mr. Arn stated that it was issued to the corporation in recognition of its effective organization for maintaining its essential services under all circumstances and conditions. This constitutes a splendid contribution to the war effort as well as to the security of the people and property of metropolitan Mobile.

Special mention was also made of the appreciation of the Office of Civilian Defense for the company's hearty cooperation throughout the entire period of the Civilian Defense Organization in Mobile.

The award was accepted for the company by Maurice White, vice-president of the Mobile Gas Service Corporation.

Highest Merit Award for Annual Report

A HIGHEST Merit Award "for distinguished achievement in annual reporting" has been given the Public Service Corporation of New Jersey by the Financial World, a New York publication, with reference to the 1943 Annual Report to stockholders. The certificate states that the Public Service Report was judged as being among the most modern from the standpoint of content, typography and format of the 1,000 annual reports examined during 1944. A similar award was granted with respect to the 1942 Annual Report.

Table 5
ESTIMATED NUMBER OF APPLIANCES IN HOUSEHOLDS

Appliance	Northeast	North Central	South	West
Cooking stove-gas	6,885,344	6,617,952	3,910,608	2,891,176
Cooking stove-elec.	607,899	1,351,583	808,443	775,019
Water heater-gas (All)	2,034,680	3,129,324	2,134,960	2,193,452
Water heater-elec.	185,921	428,245	286,193	302,905

Key:

Northeast: Me., Vt., N. H., Mass., Conn., R. I., N. Y., N. J., Pa.
N. Central: Ohio, Ind., Ill., Mo., Kan., Neb., Iowa, Mich., Wis., Minn., N. D., S. D.
South: Del., Md., Va., W. Va., N. C., S. C., Ga., Fla., Ala., Miss., La., Ark., Tenn., Ky., Okla., Texas.
West: Wash., Oregon, Cal., Ariz., N. Mex., Colo., Utah, Nev., Wyo., Mont., Idaho.



Fig. 1. New central storeroom for instruments, pipe, tools, and supplies

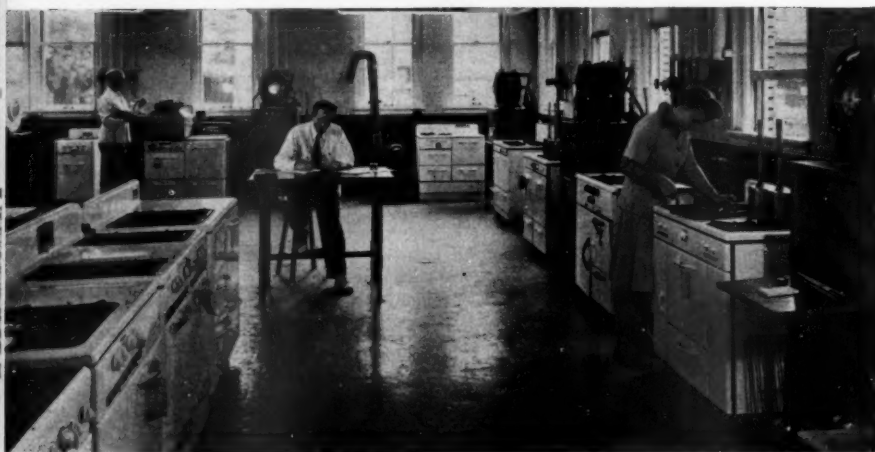


Fig. 2. General view of gas range test room in August, 1944. Number of appliances now being submitted shows large increase compared to a few months ago



Fig. 3. New arrangement of machine shop including sheet metal brake, shear, hand saw, welder, drill press, vises, welding and soldering equipment

Laboratories

By F. E. VANDAVEER

American Gas Association Testing Laboratories

SEVERAL months ago when our war contract for production of oxygen regulators was nearing completion, a program of preparing the facilities of the American Gas Association Testing Laboratories for increased peacetime demands was started. Without interfering in any way with progress on our war work, our gas industry research, or gas appliance testing also under way at the time, this plan has been carried to completion.

It is anticipated that soon after the end of hostilities in Europe and subsequent further easing of restriction on peacetime production, a large number of gas appliances and accessories will be submitted for test. With mounting interest in our industry for additional research there can be little doubt that such assignments to the Laboratories will increase. Accordingly, all indications point to an enlarged peacetime activity very soon after the war is over to an extent greater than at any period in the Laboratories' history. As there is now hope for an early defeat of Germany the wisdom of having undertaken this preparation some time ago is apparent.

Profiting by our experiences in war work and in 19 years of Association approval testing and research for the gas industry, several major changes have been made in our former facilities. These hold special interest for those familiar with the utilization of gas. It should also be reassuring to manufacturers of appliances and to members of committees supervising research projects to know that our organization has anticipated postwar expansion and is already in readiness to meet it.

A central storeroom as shown in Fig. 1 has been constructed and put in operation. All tools, fittings, pipe, instruments, tubing, paint and other

Prepare for Peacetime

supplies are checked out of and returned to this room centrally located on the first floor. This arrangement has already demonstrated its value in saving time and money and in replenishing stock.

The general view of the gas range test room (Fig. 2) indicates the extent to which approval of ranges other than Victory models is now demanded. Appliance testing has already increased materially from previous low levels of several months past. Illumination has been greatly improved by installation of new fluorescent lights. All wet test meters have been cleaned,

present facilities of great assistance.

To speed up production and correlation of work of various subcontractors on our war activities a new one-half ton truck (see Fig. 5) was purchased. It will be available for numerous light hauling jobs in peacetime and will prove a real accommodation when equipment or appliances parts are needed quickly.

A new, larger and more portable draft diverter test stand, as shown in Fig. 6 has been constructed. Either updraft or downdraft can be applied to the diverter under test in regulated volume by manipulation of gate valves. Nested pipes in any size are readily available from the storeroom.

The large number of test reports, test records, research reports, bulletins and correspondence necessary for reference is illustrated in Fig. 7. Four rooms in all are used for such purposes.

Last Fall a more efficient automatic system for keeping the water in our 4—5,000 cu.ft. gas holders from freezing was installed. Lines connecting two of the holders are shown in Fig. 8. The water circulating pump is located in the boiler room at left of Fig. 9. Rapid circulation of water and interconnection between holders keeps the entire body of water at one temperature avoiding differentials between top and bottom. A thermostat in one holder regulates the flow of steam through a heat exchanger also located in the boiler room and maintains the water just above freezing. Gas house heating boilers in service for the past 16 years have been completely reconditioned by the Laboratories' maintenance force for next winter's operation. An air compressor, vacuum pump, D. C. generator set, electric switch boxes and meters are also located in the boiler room. An incinerator formerly located in this room has been moved to a new location in the basement and enclosed with a metal partition.

Portions of the basement used for storage purposes have been completely



Fig. 4. New lathe used for war products development, and construction of instruments

painted and proven. New flexible hose connections to permit easier leveling of the meter without breaking solder connections at the back have been installed on all meters and new pressure regulators and U-gages added where needed.

More efficient arrangement of the machine shop, as shown in Figs. 3 and 4, including sheet metal working equipment, drill presses, spot welder, welding and soldering equipment, grinders, vises and a lathe, has been completed. All have been very useful in making models of instruments, war products and research equipment. Appliance manufacturers visiting the Laboratories who need to make minor changes in appliances have found the



Fig. 5. New 1/2-ton pick-up truck

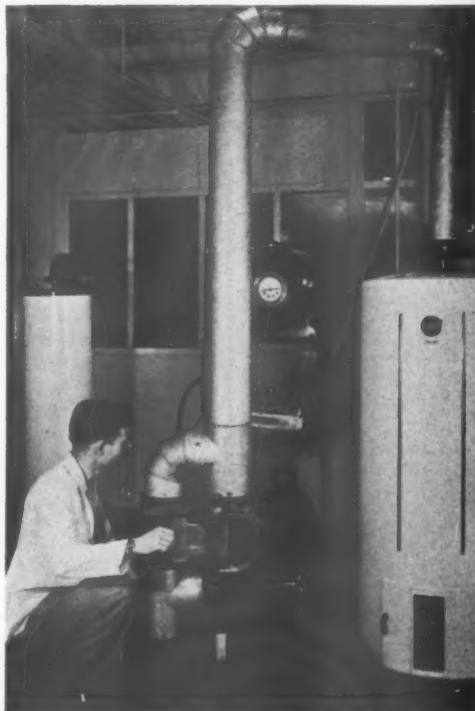


Fig. 6. New larger capacity portable draft diverter test stand

Fig. 7. One of 4 file and stockrooms



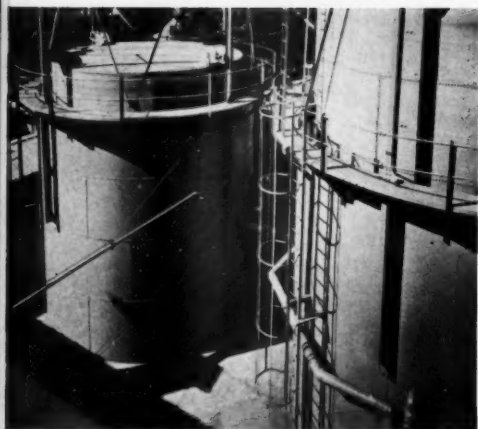


Fig. 8. Two test gas holders showing additions for winter heating

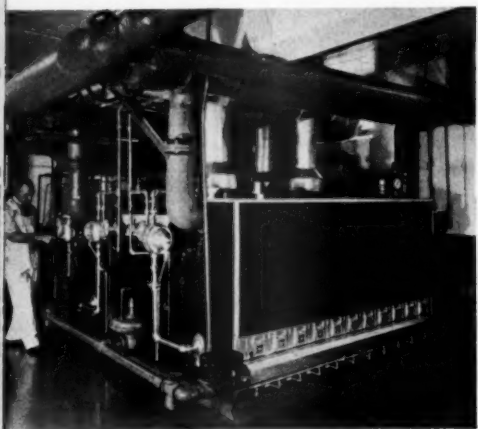


Fig. 9. Two large gas-fired steam boilers for heating Laboratories and gas holders



Fig. 10. General view of Laboratories storage basement showing elevator, paint mixing cabinet, and storage cabinets for equipment

renovated. Four new cabinets for storage of certain research and test equipment and janitors' supplies were recently built as shown in right background of Fig. 10. Accumulation of many items which it had been necessary to keep on hand temporarily was

thoroughly sorted. All no longer useful were disposed of, thereby making a considerable contribution to the metal scrap and paper drives. The entire basement is now maintained in the same condition as our test and research rooms. As Fig. 10 would indicate it is ready for storage of additional appliance crates when our testing business increases.

ness increases.

While further improvements will continue to be made, these changes in building and equipment and many others not specifically mentioned will readily show that the Laboratories are prepared for anticipated increases in testing and research work in the immediate postwar era.

Chance for a Free Meal on Your Competitors

PERHAPS as an answer to the gas industry's Coordinated All-Gas Kitchen Program, the electric industry has dreamed up a new appliance selling stunt. The latest, announced by a Chicago electric appliance company, is to spur postwar sales with a complete line of electric kitchens in large department, home furnishings, hardware and appliance stores, where prospective customers may prepare entire meals and invite their family or friends to eat it.

It is claimed that "many thousands of dealers who have never before sold on this basis will do so."

Further (gas promotion men please note): "Package sales will not top individual appliance sales immediately after the war, but their presence and the package idea will be responsible for the installation of complete kitchens on a unit-by-unit basis."

The key appliance in this new all-electric kitchen scheme? You guessed it—the electric range!

Money's Worth Out of a Trade Association*

By C. B. LARRABEE, Publisher, *Printers' Ink*

FOR a number of years, both as a member of *Printers' Ink's* editorial staff and as a publisher, I have watched the operation of trade associations. During that period I have come to one exceedingly bromidic conclusion. It is that a member benefits from an association in a pretty direct proportion to the amount of time he exposes himself to association activities.

Too many members confine their exposure to the annual convention. Now I have nothing against annual conventions, though when I was an editorial man and attended a couple of dozen a year I frequently reached the stage when I wondered why anybody anywhere ever went to a convention.

The annual or semi-annual gathering of the executives in any industry can be very helpful. That is probably the reason why during these war years, when conditions are so uncertain, convention attendance has increased.

It has always seemed to me, however, that the member who confines his activities to the annual convention is cheating himself on his investment in an association membership.

We at *Printers' Ink* have found this true of our membership in The Associated Business Papers, for example. To be sure, the members of our staff who are fortunate enough to attend the conventions come back to the office loaded down with notes. Often the ideas and suggestions we pick up at a convention affect our publishing policies for the following year.

In the long run, however, the annual convention is only a single A.B.P. activity. All during the year a dozen or more committees are working quietly, but vigorously, for the betterment of the business-paper publishing industry. Often these committee members don't get credit for the progress for which their work is responsible. To me the most significant fact about this work is that it does not benefit the members of A.B.P. alone. Much of it is of great value to all sound, reputable business paper publishers.

I think that the A.B.P. member who is not intimately acquainted with the work of the excellent headquarters' staff of A.B.P. misses a lot, too. Perhaps we see the staff more than a lot of publishers do because they happen to be neighbors of ours on the same floor in the same building.

On several occasions, particularly during the last two years, the staff has been very helpful to us in solving some knotty problems. They know many facts about the whole publishing field that we as an individual organization cannot possibly know.

By this time you will see that I am an A.B.P. enthusiast. But I think any trade association member who uses his association's services frequently and wisely will be just as enthusiastic about his own group.

* Reprinted from *Printers' Ink*, September 1, 1944.

Gas Plant Safety . . . An Operating Man Looks at Accident Prevention Problems

PERHAPS nowhere in industry does the importance of "Safety First" and "Accident Prevention" mean so much as in a gas plant, especially in that plant where the three kinds of gases are being manufactured, namely, coke oven gas, producer gas and water gas.

In a plant of this kind, on continuous operation, the hazards encountered are many and varied and therefore the accident prevention program must be a continuing performance and a never-ending effort on the part of the employee, supervision and management.

Let us start our safety program with the proper training of the new employee, making certain that he understands what we are trying to accomplish and that he plays an important part in that accomplishment. It is good policy to explain why certain procedures must be followed, that these procedures have been established for the protection of life and property.

Foreman Key Man

After our new employee has received his preliminary instructions on safety and has been given his safety rule book, he is introduced to his foreman with whom he will work and from whom he will receive his general instructions on how to become a safe worker, how to prevent accidents and the application of prone pressure. The foreman is inevitably the key man in any safety program and his influence should not be overlooked. No matter what form that safety education takes, it should be kept in mind that it is the foreman who is in the best position to instruct the worker.

It can truthfully be said that if a foreman is thoroughly "sold" on safety, he in turn will have no diffi-

By EDWIN W. SCHAEFER
*Asst. Supt., Greenpoint Works
The Brooklyn Union Gas Company,
Brooklyn, N. Y.*

culty in selling the employees whose work he directs.

The thorough training of every employee in the application of the prone pressure method of artificial respiration cannot be over stressed. The knowledge of its proper application has been a great help in the saving of life in asphyxiation, electrocution and drowning both on and off the job.

Proper Tools Vital

No man can work safely if he is not given the proper tools or equipment to work with. Mechanics are not allowed to use chisels that have mushroomed heads, hammers with broken handles or other tools not properly suited for his work. Riggers must not use blocks that are in need of repair or rope that is frayed. All steel cable must be free of kinks and all tackle must be of sufficient size for the load it is to lift. When working in high places riggers must wear safety belts.

Pipefitters quite frequently use a wrench too small for the work required. Rather than obtain the proper size wrench a piece of pipe is slipped over the handle of the small wrench to provide extra leverage. This results in damage to the tool and has been the cause of frequent accidents. This practice is never permitted and always cautioned against. It is also important that the jaws of all wrenches be replaced when damaged.

Each month a committee consisting of the master mechanic, assistant master mechanic and department foreman, conduct a thorough inspection of all tools in the tool room and those located in various departments.

Tools that are defective and beyond repair are destroyed. Those that can be repaired are sent to the machine shop for re-conditioning.

No doubt many of us have seen the results of welders using the electric arc whose arms and necks were badly burned because they were not wearing the proper protective clothing. All welders are furnished either leather or fireproof jackets, chaps, leggings and spats to be worn as the occasion demands. Helmets are kept in good order and discarded when beyond repair. Where the rays of the arc may become dangerous to others a suitable guard is provided. It is not permissible to strike an arc unless the helmet is being worn or a hand shield is being used.

Electric Hazards

The electrician, because of the nature of his work, must constantly be on the alert. His supervisor must always see to it that there is no taking of chances such as testing low voltage circuits with the bare hands, that switches are not pulled under load and that every circuit is killed when possible.

To make his work as safe as possible he is furnished with special voltage testers which are underwriter-approved and safe on low voltage. When it is necessary to pull fuses he has in his kit an approved type fuse puller.

When working on high-tension circuits or equipment he must wear rubber gloves inside a pair of leather protectors. These gloves are tested regularly by a competent testing laboratory and any glove that fails to withstand the applied voltage test is destroyed. An electrician is never allowed to work on high-tension or in a high-tension switching room alone. This precaution may save a life should the worker become entangled in the high-tension circuit.

Paper originally prepared for the Greater New York Safety Council.

Proper switch hooks, rubber blankets and grounding devices are also used when doing work of this nature.

When working on the plant underground system all manholes must be checked for gaseous conditions and then thoroughly ventilated before entering. Under no circumstance can anyone work in a manhole without wearing the proper protective equipment which consists of jacket, rubber gloves, mask and safety belt.

To all who need them, goggles are furnished and to those who wear glasses and if found necessary, prescription goggles are furnished instead of the cover-all type.

Too much emphasis cannot be placed upon the enforcing of all the rules covering the wearing of goggles. Let us keep in mind the fact that every 10 seconds, day and night an American worker is injured. That every 3 minutes, day and night, an American worker suffers an eye injury. Of all the blind in this country 15% lost their sight as a result of an industrial accident. Sight is our most important sense so let us do all we can to protect it.

Whenever it is necessary for anyone to work upon a scaffold, care is taken to see that it is properly built and of good sound material. All safety planks are marked and so treated that they are used for no other purpose. All ladders are equipped either with spike points or non-skid shoes. These ladders and planking are always inspected before using.

Free Discussion Encouraged

In order that the men themselves may have a voice in the safety program and given an opportunity to express their opinions, monthly departmental meetings are held. At these meetings unsafe practices are discussed, previous accidents reviewed, questions asked on safety rules and a demonstration of prone pressure is held.

The men are made to feel that this is their meeting and everything is done to encourage them in the free discussion of any condition which would be helpful in accident prevention. Suggestions are always welcomed.

There is also a general safety committee which meets monthly. This committee consists of all the department heads and a representative selected by the men. It acts upon all safety suggestions, investigates accidents and places responsibility for them. Ways and means to prevent a recurrence of accidents is also discussed.

When an accident occurs it is the sole purpose of the investigating committee to get all the facts in the case, remove the hazardous condition so that further accidents from similar causes can be prevented.

The idea of seeking to fix the blame must always be avoided, otherwise an attitude of "covering up" may develop which might make it impossible to get all the facts.

If every person involved knows this, then there will be no reason to withhold essential information and the investigation will have all the facts to aid in further preventive measures. When investigation and inspection are adequately supplemented by corrective action, accidents will steadily decline. For every accident prevented there is a saving of manpower.

All accidents or injuries, no matter how small must be reported to the

first-aid station where a registered nurse is in attendance. This precaution permits a check up by the nurse and may prevent a lost-time accident.

Good Plant Housekeeping

The importance of good plant housekeeping is considered one of the most effective ways of showing a company's interest in the safety of its employees. A neat orderly plant not only stimulates carefulness on the part of the employees, but also results in more efficient operation.


In each department of a gas plant there are conditions which constantly present accident hazards. In each department measures have been taken to eliminate these conditions.

At the coke ovens there is always the danger of men being struck by a larry car, pusher machine, clay carrier or door machine. To avoid such accidents all machines are equipped with a constant ringing or hand-operated alarm. The quenching locomotive has a bell and pneumatic whistle to warn anyone on or near the quenching track.

With these machines so equipped, one would think that sufficient precaution had been provided; however, just recently it was found that men were crossing the pusher track with-

Identity Card for Licensed Plumbers

This will identify



A LICENSED PLUMBER WHO IS COOPERATING WITH
US IN THE SALE OF MODERN GAS APPLIANCES

**LICENSED
PLUMBER**

No. _____

BR. _____ NO. _____

SIGNATURE _____

MANAGER'S ASS'T.
IN CHARGE OF DLR. RELATIONS

THE BROOKLYN UNION GAS COMPANY

This attractive, wallet-size identification card has been designed by The Brooklyn Union Gas Company to help the legitimate licensed plumber make money in the gas appliance field. It will identify licensed plumbers cooperating with the company in the sale of approved gas appliances. All appliances sold by Brooklyn Union must be connected by licensed plumbers

out notice of the approaching pusher machine. To remove any possibility of doubt as to hearing the regular alarm, each pusher machine is now being equipped with an electric horn, to be operated by the luterman who rides the pusher machine facing in the direction of travel.

On the coke side of the ovens at the bench level, several accidents occurred when the operators of the door machine and the clay carriers stepped off the bench and fell to the quenching track. This was a serious situation and to eliminate the hazard, wing guards of steel and wire screen were attached to each machine.

An opening in the coke guide which permitted passage through it presented a definite hazard. After several narrow escapes by the operators this opening was closed.

Other Precautions

In the alleyways beneath the coke ovens, no man is permitted to work alone. This is a precaution against asphyxiation, burns or entanglement in the operating rods.

Canister masks and hand-operated blower masks are available for any emergency.

The by-product building also presents a number of hazards that must be guarded against. When working on acid lines a rubber suit complete with gloves, boots and helmet must be worn. Should anyone come in contact with acid, containers of sodium hydroxide (Na OH), conveniently located, can be used to neutralize burns.

Saturators and tar extractors must be purged, sealed off and tested for gaseous conditions before men are allowed to enter when repairs are necessary. At the light oil plant precautions must be taken against contact with caustic soda. Preventive measures have been taken by having available containers of boric acid and acetic acid in case of contact.

The clean out levers on the dust legs of the waste heat boilers in the producer house were the cause of a great number of scalp injuries. At first they were painted a bright red but this did not stop the injuries. Later they were protected with rubber lagging which helped considerably.

From a suggestion submitted by one of the producer house operators

NORMAN B. BERTOLETTE
233 PEARL STREET
HARTFORD 4, CONNECTICUT

September 14, 1944.

Mr. John Smith,
25 Suburban Avenue,
Hartford, Conn.

Dear Mr. Smith:

Call it vision or just plain horse sense, we Americans cannot help planning and hoping for a brighter future - even while doing our level best to meet the limitations and demands of this war period.

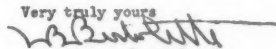
We in The Hartford Gas Company are making every effort, and I believe successfully, to keep your gas service at a high quality level. As difficult as this is, we are also planning for your future requirements.

No doubt your present gas appliances are giving you dependable, unfailing, day in and day out service. This war period has emphasized the dependability of gas appliances - their long life and service-free characteristics. Nevertheless, you are probably planning as are many others to make certain appliance replacements when that is possible.

Your Gas Company, gas appliance manufacturers, and the local dealers have laid definite plans for the time when homes may be equipped with the latest developments in gas automatic ranges, refrigerators and water heaters. The production lines of peace-time will, shortly after V-Day, give you gas appliances of a new beauty and improved performance.

These new gas appliances will be a challenge to all other similar equipment on the market. I earnestly hope that you look into the new developments as they become available since they can mean so much to you in the daily and hourly operation of your home.

Very truly yours


N. B. Bertollette
President

THE HARTFORD GAS COMPANY

NBB:RG

Copy of letter sent by the Hartford gas utility to more than 9,000 (about 20%) of its residential customers. Designed to start customers thinking about modern gas appliances before purchasing replacements or additional equipment after the war, the letter was sent to a selected mailing list of prominent people as well as a representative cross-section of the company's residential customers. Each letter was signed by President N. B. Bertollette and sent by first class mail in an envelope bearing only the company's street address. Many favorable comments have been received concerning it

it was found that the levers could be turned 90° and the hazard completely removed without interfering with operation. The suggestion was adopted and the operator suitably rewarded.

To guard against asphyxiation the windows have been removed from the building at the operating floor level. Subway grating was substituted for solid flooring and a high-velocity fan is used for forced ventilation in

the summertime. In case of emergency an inhalator and blower-type mask are available.

In coal and coke handling, precautions against accidents have been taken by avoiding work on all conveyors unless shut down and switches locked. Safety cords for emergency stopping are installed on both sides of each conveyor. No one is allowed to work upon the crusher, breaker or

(Continued on page 431)

How To Grill a Steak

(Reproduced by special permission from the Postscripts department of the Sept. 9 *Saturday Evening Post*)

IS there anything more exciting than cooking a steak right outdoors on your own back-yard grille? Of course, getting a steak runs it a pretty close second for excitement, but it doesn't have the attendant danger of starting a forest fire.

The advantage of the outdoor grille is that you can burn anything in it—charcoal, peat, wood, cannel coal, left-over pieces of last week's guests—anything at all. The point is that what you use for fuel imparts a special flavor to the steak—charcoal theoretically being the best imparter.

I ate half a pound of charcoal the other day in an endeavor to find why, but it tasted terrible, and the doctor says my internal organs will be in a constant black-out until the spring of 1947 at the earliest.

Outdoor grilles run to two extremes. The affluent in our neighborhood have stone-and-masonry contrivances, taking up half an acre, big enough to roast a buffalo in, and with chimneys so high as to constitute definite aviation menaces. We, on the other hand, get along with a portable grille, made out of old pieces of wire. I found it up in our attic. It may be a bird cage, for all I know, but it has a good draft, and holds enough fuel for the standard medium, or forty-eight-point steak.

I simply put this outside on the ground at any strategic point I choose—usually one that is directly to the windward of where folks are sitting down to watch.

The next thing is to get a fire started. This calls for skillful woodsmanship and the application of a pint and a half of kerosene over the charcoal. A touch with a match, and if my woodsmanship has been of sufficiently high order, the whole thing ignites with a roar, leaps about two feet into the air, and settles back to earth with a solid thud which shakes the charcoal and packs it down more solidly. After a thick pall of black smoke has cleared away from the neighborhood—an interval which allows all the contestants to imbibe two additional old-fashioned— a nice cheerful glow now pervades the grille and vicinity. This glow should not be allowed to die down, and seldom is.

The important thing in cooking a steak outdoors is not to overdo it. About a minute on each side is sufficient—just enabling you to impale it on a fork, grab your drink in the other hand and make the house before the cloudburst lets go.

Luckily, there is an invention known as a kitchen stove which is catching on like wildfire among forward-looking people. I guess it must be the gas we use, because I've always said there's something special in the flavor you get from a steak broiled right under your own gas flame. This seems no time to quit saying it.

—PARKE CUMMINGS.

Three-Way Program for Selecting and Training Gas Appliance Salesmen

A THREE-PHASE program for the recruitment, selection and training of gas appliance salesmen who will be employed by utility companies and their dealers when merchandising is again resumed will soon be offered by Servel, Inc., in collaboration with the American Gas Association. This program is being announced in the current issue of the *Servel News*, company magazine.

The three phases of this program include the following:

1. Recruiting and selection of domestic gas appliance salesmen by utility companies for the sale of gas household equipment. This will consist of a plan developed by Dr. Robert N. McMurry, Servel's consultant on selection and training of gas appliance salesmen.
2. An indoctrination training course for gas company salesmen to be developed by the American Gas Association's Com-

mittee on Selection and Training of Sales Personnel.

3. Intensive product training on gas appliances offered by the manufacturers whose lines are merchandised.

Servel's part in the joint program is being directed by R. J. Canniff, advertising and sales promotion manager. Coordinated activities for the American Gas Association are in charge of R. E. Williams, Binghamton, N. Y., chairman of the Committee on Selection and Training of Sales Personnel.

"The major problem of nearly every sales manager in the gas industry today is that of rebuilding a well-trained and productive sales organization in preparation for the day when merchandising is again resumed," stated Mr. Canniff. "Realizing this obvious need and the procedure which must be followed, some time ago

Servel engaged Dr. McMurry to aid in the development of a comprehensive program for the selection and training of domestic gas appliance salesmen.

"During the past several months a national survey has been made covering some 50 utility companies operating in all parts of the United States. The case histories and records of performance of over 1,000 retail gas appliance salesmen have been studied and analyzed. Hundreds of these men have been personally interviewed to provide the basic material for Servel's program for the selection and training of retail salesmen.

"Out of our findings we have developed a program which will greatly speed the recruiting and selection of efficient salesmen," he said. "To familiarize gas companies with our objectives and to assist in the organizational program, Servel will conduct a series of regional sales clinics to help train the men who will execute this important assignment in their own companies."

A. G. A. Committee Work

The importance of thorough training in gas company sales procedures and company policies is largely the responsibility of the company who will be aided by the American Gas Association's Committee on Selection and Training of Sales Personnel headed by Mr. Williams. In announcing this phase of the program, Mr. Williams said:

"Adequate indoctrination and basic sales training for our sales personnel before they enter their sales territories, a balanced plan of compensation and a program for progressive training in specific appliance fields, rank among the most important of the postwar tasks facing gas company sales departments.

"Now is the time to perfect our plans for careful selection of our postwar sales personnel and for adequate training of our sales people in preparation for postwar selling.

"If ever the gas industry should unselfishly pool its resources to gain maximum benefits from the over-all effort, this is that time. We need the highest caliber, the best trained sales people that we can produce to enter the arena of postwar selling."

Dr. Robert N. McMurry, Servel's consultant on selection and training of gas appliance salesmen, is well-known as a specialist in applied psychology and as an authority of personnel administration and market research. He has had wide experience in dealing with the problems of field sales organizations and is the author of numerous books and articles dealing with techniques for selection of salesmen.

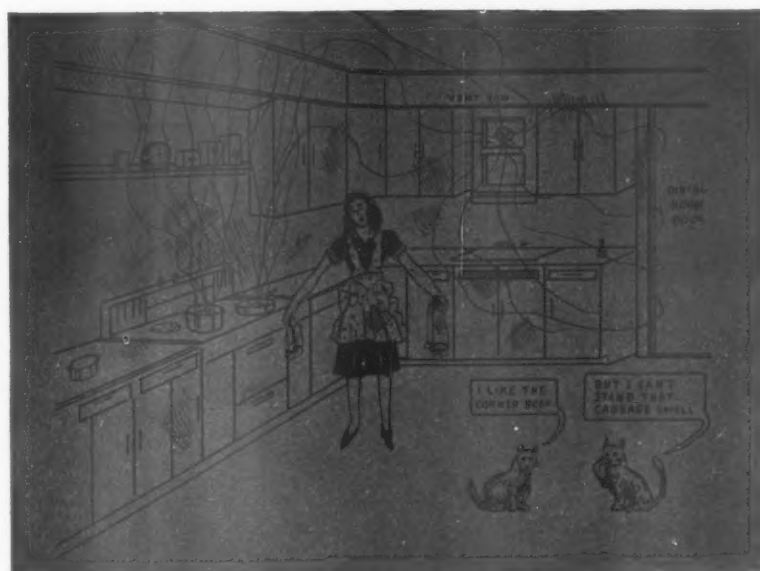
WHEN TO SELL GAS

We cannot sell Gas Service yesterday, but we can sell it tomorrow.—Janus in "The Gas Times," London.

"4-Freedoms Kitchen"... New Principle Provides for Cooler, Cleaner Cooking by Gas



The "Comfort-Conditioned" Kitchen with modern range ventilation—Cooking odors, grime and grease, along with unwanted heat from broiler and oven are caught at the source and carried outside by means of a concealed flue connected at the rear of the range. The top burners are ventilated by the ventilator over the range



Old-style, ineffective method of "ventilation"—Grease and grime are not caught at the source but circulate around the kitchen and deposit themselves on walls and ceiling. Cooking odors penetrate the house and surplus heat makes the kitchen hot and uncomfortable

STEPPING out in front in the post-war home planning parade, the Rochester Gas and Electric Corporation, Rochester, N. Y., is now showing a new Comfort-Conditioned Gas Kitchen which is attracting more public attention than any other recent activity of the company. Involving a revolutionary new principle in kitchen design, it puts into effect a simple ventilation plan designed to catch cooking odors at their source and thus eliminate a major obstacle to kitchen comfort and cleanliness.

Interest is shown by the fact that in the first ten days the model Comfort-Conditioned Kitchen was on display, more than 8,000 people thronged through it. Prior to this, a preview was given to 150 Rochester builders, architects and equipment suppliers. They were supplied with plans and sketches showing how easy it is to have a modern gas kitchen that will be cooler in summer, heat-saving in winter and cleaner the year-around.

On another evening the Rochester Home Builders Association held one of its postwar home planning meetings in the Rochester Gas and Electric showrooms, attracting an audience of 1,000 to hear an address by C. V. Sorenson of the Northern Indiana

One section of the Rochester Comfort-Conditioned gas kitchen. A ventilator at back of range connects with concealed flue





Audience of 1,000, attending a meeting of Rochester Home Builders' Association, hear C. V. Sorenson, chairman, A. G. A. Residential Gas Section, talk on the gas industry's coordinated kitchen program

Public Service Company of Hammond, Indiana, and chairman of the A. G. A. Residential Gas Section. A dramatic feature of this meeting was the challenge of Irene Muntz, home service director, to the audience. She told them that a roast was cooking in the oven of the ventilated range and challenged the visitors to identify it as they passed through the kitchen. Not one of them was able to tell, so completely did the range ventilator carry off all cooking odors.

Rochester Engineering Feat

The Comfort-Conditioned Kitchen was designed and built by Rochester Gas and Electric engineers to demonstrate that grease, grime and objectionable cooking odors can be eliminated by means of a simple ventilation system that catches these things at their source and carries them outside before dirt is deposited on the walls or cooking odors penetrate the house.

A simple installation plan permits Certified Performance gas ranges, at the will of the housewife, to be vented either into a concealed flue or into the room through the regular splashers ventilators universally used in present flush-to-the-wall CP ranges. When heat is desired in the kitchen the damper to the flue in the rear of the range can be closed by a touch of the finger, sending the wanted heat through the

draft hood into the regular splashers outlet and out into the room. When heat is not desired, or when the cooking operations involve objectionable odors and greases, the damper is opened and heat, odors and grease are carried outside through the concealed flue. Thus it is possible, through simple means, in either new or old houses, to have gas perform the double serv-

ice of cooking food and helping to heat and humidify the home.

Control of top burner operations is effected by means of a ventilator over the range connected to a concealed flue. Both oven and top-burner control switches are conveniently located just above the range and a red pilot light indicates when the blower motor and ventilating fan are in operation.

It is pointed out that gas as the fuel for the range has a decided advantage since the hot products of combustion can be the vehicle for carrying out the greases and vapors uncondensed, instead of being deposited on the walls. In order to show how effectively this is done the Rochester kitchen has wall paper instead of painted walls and the spotless condition of this wall paper is one of the best testimonials to the manner in which the range ventilators do their work of carrying out grease and grime.

The equipment in the Comfort-Conditioned Kitchen includes a gas refrigerator, Certified Performance gas range, electric dishwasher and garbage disposal unit. The kitchen is being advertised locally as the "Four Freedoms" kitchen . . . freedom from cooking odors, freedom from dirt, freedom from unwanted heat and freedom from fatigue.



Window display during the Fifth War Loan drive which won third prize of \$200 in War Bonds for its originator, M. R. Norton, district sales supervisor, Wisconsin Power and Light Co., Fond du Lac. Photographs of 38 Fond du Lac boys who won't come back were arranged in a red, white and blue satin setting. A large replica of the Purple Heart medal in the center was flanked by a real Purple Heart award and a Silver Star medal. The magazine Display World conducted the contest which drew 2,000 entries

A New Principle in Gas Furnaces

THE discovery of a new principle in furnace design is a rare occurrence. A furnace heated by the combustion of gases has always been held to comprise a combustion chamber, a chamber in which the goods are heated, and a flue through which the products of combustion are removed from the furnace; some or all of these functions may be performed by the same chamber, but in general these functions are clearly defined. The last occasion when a new technique was introduced was in 1906-10, when Prof. W. A. Bone and C. D. M'Court developed the technique of surface combustion.

What the Data Showed

A new principle has just been described by R. H. Anderson, D. C. Gunn and Dr. A. L. Roberts involving the use of permeable refractories through which furnace gases are withdrawn from the furnace chamber.* This has been worked out by the Department of Coal Gas and Fuel Industries at Leeds University, the Yorkshire Industrial Gas Development Centres, the Bradford Gas Department, and certain manufacturers, including a prominent manufacturer of insulating fire-bricks. The new furnace can be applied to many types of heating operation, and several units have been in operation for considerable periods. It has been developed primarily with town gas as the fuel, but could be used on other fuel gases provided that they are free from dust.

Among the characteristics of the newer insulating refractories that are now employed in hot-face insulation is that of high permeability to gas flow. This has been regarded hitherto as a difficulty overcome by backing the insulating refractory with a normal refractory of low permeability. The authors, however, conceived the idea that

the gases could be withdrawn from the furnace chamber through the pores of the refractory if it was made sufficiently permeable, and that considerable benefits would result.

Initial trials suggested that a permeability at room temperature of 4 to 5 cu.ft./hr./sq.in. of material 1 in. thick would be satisfactory. Owing to the increase in the viscosity of gases with temperature these figures would be reduced to 1 to 1.5 at 1,200° C. Data obtained in industrial installations showed, as was to be expected, that the permeability of the structure as a whole was some three times greater than that of the material.

The method of construction is that the furnace chamber is built of permeable refractories, i.e., of open-textured insulating fire-bricks, behind which is a space, which in turn is backed by a normal fire-brick wall. If the pressure on the furnace side of the wall is sufficiently greater than on the side farther from the furnace, the products of combustion will pass through the wall; consequently, there is no flue leading from the furnace chamber in the ordinary way. The difficulty of keeping sufficient positive pressure within the furnace chamber when the door is opened periodically has led to a suction being maintained in the annulus into which the products are withdrawn.

Substantial Fuel Savings

It appeared likely that this design of furnace would achieve notable savings in fuel. The cellular nature of the material, of the order of 1,000 sq.ft. per cu.ft. of material, presents a vast surface over which heat transfer can take place. Thus, the temperature of the outgoing gases at any point in the wall is likely to be the same as that of the material of the wall. Major heat losses are (1) the loss of heat in the products of combustion leaving the furnace and (2) the heat conducted away through the furnace wall.

Considering, in what may be called the "conventional" furnace, a cham-

ber with an internal wall temperature of t_1° , the gases will leave at or above t_1° , and this temperature governs the heat lost in the flue gases. In the permeable refractory furnace, the gases escape at a lower temperature, t_2° (which is that of the outer side of the permeable furnace lining), due to having given up additional heat to the brick while passing through the wall. Thus, the loss of heat due to the temperature of the products of combustion is reduced.

Important Possibilities

The second source of heat loss is by conduction through the furnace wall. Again, the temperature of the outside of the wall will be t_2° for the permeable furnace, and this will be higher than the temperature t_3° with the conventional furnace; thus, less heat is lost by conduction through the furnace wall.

In addition to its possibilities in saving fuel, this new design offers important possibilities in the uniform heating of furnace chambers. There must be inequalities in temperature in the conventional furnace where gases are burnt at one place and the products of combustion leave at another. It is, moreover, often difficult to avoid dead spots where the gases do not circulate freely and the temperature is consequently lower than elsewhere. This furnace makes it possible to operate with a positive pressure throughout the furnace chamber and to withdraw the gases uniformly over the whole surface, so that the furnace chamber can be filled with flame. With a normal flue construction it is difficult to work furnaces under pressure.

Several of these furnaces described by the authors have been in industrial operation for some considerable time. The results fully bear out the deductions drawn from theoretical considerations, and the behaviour of the furnaces has been highly satisfactory. A small crucible metal melting furnace working at low temperatures, for example, showed over an extended pe-

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* A limited number of copies of the complete report of the authors, containing graphs and other data has been received by the American Gas Association and is available for members' inspection.

ried a fuel saving of 15 per cent over an orthodox furnace used for the same purpose. In the same pair of furnaces a no-load test showed a saving in fuel of 58 per cent with the permeable wall furnace. Another successful application has been for heating galvanizing baths.

Thermal Efficiency

A mechanically charged furnace for reheating steel castings which has been in continuous operation for over 12 months measures 7 ft. 6 in. back to front, 3 ft. 9 in. wide, and 22 in. to the crown of the arch. The waste gases are withdrawn through the walls, back, arch and a portion of the hearth, the necessary suction being applied by an exhaust fan. Records kept during 57 consecutive runs showed an average fuel consumption of 1.25 cu.ft. of town gas per lb., which included all gas used on the furnace—a thermal efficiency of 44 per cent, the best run showing 56 per cent.

No clogging of the refractories has been observed, and in spite of the severe conditions to which the furnace is subjected, there has been no spalling and very little cracking of the lining. These conditions involved rapid heating up from a cold start with no load on the furnace; the castings were then charged and brought up to 900-950° C. and soaked; they were then withdrawn and a fresh charge immediately inserted. An interesting feature is the speed with which these furnaces can be heated up. After a week-end shut-down, i.e., with a cold start, this furnace is ready for charging after gas has been on for 17 minutes only; the same condition can be obtained in 7 minutes after an overnight shutdown.

A bogie hearth annealing furnace due for rebuilding was adapted to permeable linings. This furnace was of the single door type, having two bogies for alternative charges, each having an effective area of 5 ft. by 3 ft. wide. In this furnace permeable tubular blocks were used to give a mechanically stable structure while avoiding joints that might cause short-circuiting. This furnace was designed to anneal miscellaneous steel castings, each bogie load weighing 30 cwt. The castings were to be heated to 920-950° C., held there for 5 hours, cooled in the furnace to 600° C., and then withdrawn, after which a new charge

was inserted. After over 6 months in operation it can be said that this furnace is entirely successful and shows a thermal economy over the individual consumptions of other bogie hearth furnaces in the same works of 35 per cent, these figures being based in each instance on the performance of the comparison furnaces when new.

Other furnaces and applications were described in the paper, but to sum up, the conclusions so far reached as the result of considerable experience, it would seem that with lower furnace temperatures such as 500° C., the permeable wall construction will save about 10 per cent of the fuel. With higher temperatures of 1,400° C. the savings are likely to be about 40 per cent. In general, the maximum suitable temperature at present is about 1,300° C., on account of the limita-

tions of the refractories. The principle is not of universal application, again because of the properties of permeable refractories.

These refractories are not resistant to fluxes and could not be used for direct melting. They would not be recommended for forging furnaces, since the iron oxide scale would soon cause trouble for the same reason. There are, however, a large number of processes conducted between 500° and 1,300° C. which appear to offer a wide field for immediate development. It is a recognized principle of the industrial utilization of town gas that the greater the thermal efficiency of the process, the greater is the scope for gas. In this new principle the gas industry appears to have made a long step forward towards the better utilization of gas.

States Views on Reconversion



Louis Ruthenburg

THE *Saturday Evening Post* for September 16 carried a forthright article on the controversial subject of conversion to peacetime work by Louis Ruthenburg, president of Servel, Inc. Stating unequivocally that "our first aim should be maximum total employment," he continues:

"I believe that the fairest and most efficient method of reconversion is by quotas, but only as long as a scarcity of labor and materials remains, not an hour longer. This means more effective use of manpower and material at a critical time, for quotas will place the initial rush of production in experienced hands capable of using available manpower and materials most effectively. I fully realize that this means a certain temporary stifling of absolute free competition, but it also means that no individual manufacturer will gain undue advantage over a competitor by the accidental circumstance of being able to turn to his civilian work earlier than the manufacturer who is still tied up with war contracts.

"We are planning definitely for a peacetime pay roll much larger than our prewar employment. Every officer and principal executive serves on a postwar planning

committee which went to work before Pearl Harbor. We have analyzed the market for our refrigerators. We have in readiness a new air conditioner which is one contribution toward more jobs. Our sales organization has prepared itself to sell these products.

"But, like all businessmen, we must have intelligent co-operation from the Government during the reconversion crisis. I see three things as urgent requirements. One is that all Government, military and other procurement agencies make prompt settlement of all accounts. Two, that all surplus war materials and plants be quickly moved out of the way of postwar production. And three, that the Government continue, temporarily, its control over prices and the distribution of goods, but only until the supply of goods is in reasonable balance with demand."

In this issue of the *Post*, Mr. Ruthenburg shared honors in a double page layout with Maury Maverick, former Congressman from Texas and Chairman of the Smaller War Plants Corporation. Mr. Maverick wrote on the subject, "Small Business Must Get the Breaks."

Named Superintendent

JOHN A. CLARK, chief engineer in charge of compressing stations and gas distribution for the Hope Natural Gas Co., has been named general superintendent.

Are Residential Service Applications and Contracts Necessary?

DESIRE to reduce operating costs and to improve relations with customers has led various gas companies to simplify certain of their operating practices by eliminating requirements which they find or believe are no longer necessary.

A member company of the American Gas Association recently requested information on the general trend among the larger gas companies in the United States in relation to the use of contracts with customers who apply for domestic service. Members of the Rate Committee of the Association contributed information used to answer the inquiry and, since the information covers a matter of general interest, it is presented here in summary form.

Eleven Utilities Surveyed

This survey covers the practices of eleven gas companies. Their total number of customers of all classes range approximately from 30,000 to 900,000, and their total operating revenues, from \$1,300,000 to \$40,000,000 per year. The aggregate number of customers of the companies included in the survey are 22 per cent of the total number of gas customers in the United States, and their aggregate revenues are about 21 per cent of the revenues of all gas companies.

The companies whose practices have been surveyed in relation to application and contract forms for residential service include gas systems which distribute manufactured, natural, or mixed gas. They are situated in the East, on the Pacific Coast and in the Middle West. It appears, therefore, that an adequate cross-section, at least of the larger companies, is included in this examination of the question relating to the use of application and contracts in the case of residential customers.

In view of the limiting difficulty of presenting the results of the survey

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through reproduction of the forms employed by the several gas companies, the salient points involved in the inquiry are presented here in condensed tabular form.

Are Application and Contract Both Required?

- | | |
|-------------|-------------------------------------|
| Company 1. | Application only. |
| | (unless extension is required) |
| Company 2. | Application only. |
| Company 3. | Application only. |
| Company 4. | Application only. |
| | (unless special conditions prevail) |
| Company 5. | Application only. |
| Company 6. | Application only. |
| Company 7. | Application only. |
| Company 8. | Application only. |
| | (not considered a contract) |
| Company 9. | Application only. |
| Company 10. | Application only. |
| Company 11. | Application only. |
| | (unless special conditions prevail) |

It will be observed that most of the companies surveyed evidently consider the application for domestic service, signed by the customer, as being a combination application and contract, or regard a contract as being unnecessary except under special conditions. It is possible that more of the companies require contracts under special conditions than those who definitely indicated it. It appears very natural that contracts should be required under such circumstances.

Must Application Be Signed by Applicant?

- | | |
|------------|--|
| Company 1. | Customer must execute. |
| Company 2. | Signed application desirable but some telephone applications accepted. |
| Company 3. | Customer must execute. |
| Company 4. | Signature not required. |
| Company 5. | Claims Department contends that application must be signed but Commercial Department is opposed. |
| | Company asks for signature but is not insistent. |

- | | |
|-------------|--|
| Company 6. | Customer execution desirable. |
| Company 7. | Customer need not sign. |
| Company 8. | Customer need not sign. |
| Company 9. | Customer must execute. |
| Company 10. | Customer need not sign. |
| | (general principle) |
| Company 11. | Customer need not sign. |
| | (Application will be accepted by telephone.) |

It will be noted from the foregoing tabulation that most of the companies desire to have the applicant sign the application form, although a number of the companies do not make it mandatory and some accept applications by telephone.

Form of Application

Most of the application forms received in the survey contain a statement indicating that the customer agrees to abide by rates, rules and regulations of the company. Although these statements are frequently similar, the phraseology differs somewhat, as shown below:

Company 1.

"Subject to the rules, regulations and tariffs of the . . . Company, as filed with The Public Utility Commission of the Commonwealth of Pennsylvania, at present in force or that may be adopted hereafter, I, we hereby make application for service at the location shown above."

Company 2.

"The undersigned . . . applies for service to supply a connected load of . . . in continuation of service at . . . and agrees to use the same in accordance with authorized rate schedules, and to be bound by the Company's General Service Terms and Conditions and its rules, regulations and practices. . . . As witness my hand and seal. . . ."

Company 3.

Office form—"The undersigned hereby applies for gas service at the address specified above and agrees to pay . . . Company therefor at the rates applicable to such service and to comply with all applicable Rules and Regulations on file with the Railroad Commission of the State of California, copies of which are on file and may be inspected at any Company office. Service hereunder is conditional upon establishment of credit by the applicant in accordance with said Rules and Regula-

tions. This application shall at all times be subject to such changes or modifications by the Railroad Commission of the State of California as said Commission may from time to time direct in the exercise of its jurisdiction."

Mail form—"The undersigned hereby applies for gas service at the address indicated above, and agrees to pay all bills rendered for such service and to comply with the Rules and Regulations of . . . Company on file with the Railroad Commission of the State of California. Service hereunder is conditional upon applicant establishing his credit in accordance with said Rules and Regulations. This application shall at all times be subject to such changes or modifications by the Railroad Commission of the State of California as said Commission may, from time to time, direct in the exercise of its jurisdiction."

Company 4.

No statement on application form.

Company 5.

"The undersigned . . . requests . . . Company to supply gas service under its Classification No. 1, at . . . occupied as . . . and in consideration thereof agrees to pay for Gas so supplied . . . ; to comply with the general rules, regulations, terms and conditions applicable to contracts for service as set forth in the Company's Rate Schedule and any amendments thereof."

Company 6.

"The . . . Company is hereby requested to furnish the undersigned with gas . . . service . . . at the above address, such service to be supplied by the Company under its rules, regulations and general schedules on file with the Public Service Commission and available for inspection at the office of the Company, and to be paid for by the undersigned in accordance with Service Classifications applicable."

Company 7.

No statement on application form.

Company 8.

"The undersigned hereby applies for service subject to the Rates, Rules and Regulations of the Company. It is understood and agreed that the Company will own all gas service pipe laid under this application. If an extension is involved it is agreed to take service within 30 days after it is available."

Company 9.

"This agreement when signed by the Consumer and by an authorized representative of the . . . Company shall become a contract under which . . . Company agrees to furnish electric and gas* service to the individual Consumer and Consumer agrees to receive and pay for service in accordance with Rate Schedules

. . . Nos. . . . , and the Service Regulations of the Company now filed with the State Commission having jurisdiction over Public Utilities, and on file in the office of the Company, and as the same may be modified from time to time, which Rate Schedules and Service Regulations are hereby made a part of this contract as effectually as if fully set forth herein."

"* strike out words not used."

Company 10.

No form submitted.

Company 11.

"The subscriber hereby applies to the Company for gas to be supplied to the above premises, or any premises in lieu thereof that the subscriber may designate, and agrees to purchase and use such gas for the purpose or purposes, under the terms and conditions, and at the rates, set forth in the Service Classification numbered above, which Service Classification is on file with the ——— Commission."

General Information on Application Form

Several of the surveyed companies include in the application form certain service data, billing data, etc., but such information is not considered pertinent to the points under consideration. The following tabulation indicates the basic data shown on various application forms and indicates the companies which require them.

APPLICATION INFORMATION					COMPANY						
Address	1	2	3	4	5	6	7	8	9	*	11
Apartment	1		3	4			7	8			
Floor	1			4				8			11
Owner of Property	1		3	4		6			9		
Last Service Address	1	2	3	4		6	7	8	9		11
Send Bills to	1		3				7		9		11
Deposit Transferred From	1										
Former Customer on Premises	1		3								
Meter Installed—Number	1	2				6	7				11
Reading	1	2					7				11
Size	1	2									11
Regulator	1										
Account Number	1		3			6	7		9		
Employer	1		3	4			7	8			11
Occupation	1			4		6		8			11
Business Address	1		3	4		6	7	8	9		11
Length of Service	1			4							11
References	1						7				
Connected Load		2							9		11
Key Location		2		4		6	7				11
Rate Schedule	1	2		4	5	6			9		11
Billing Schedule		2									11
Effective Date	1	2									11
Credit O.K.		3	3	4							11
Deposit Received		2		4		6		8	9		11
New Installation		2	3								11

*Copy of form not received from company No. 10.

Comments of Respondents

The following comments of interest are quoted from the answers received from several respondent companies:

Company 2.

"In the absence of a signed agreement, there may well be difficulty in determining the party actually liable for the service as between landlord and tenant, succeeding occupants of the property and the like. Irrespective of the liability of the user on an implied contract, it would seem desirable on the sole ground of facility of collection to obtain a signature of the service application."

Company 3.

"It is obviously necessary to have such a formal application in order to know whom and where to bill for services. We consider it incidental that this application then becomes a contract."

Company 4.

"Throughout our system and I believe quite generally in utility operation in this country, applications for residential service may be oral. Usual exceptions are made in cases where the service requires a departure from the terms of the filed tariff, e.g., where application for service is made for premises located on a line or main carrying a higher minimum monthly charge in support of a greater length per customer than some stated limit."

Company 5.

"... it has been the contention of our Claim Department that such a form should be signed, as it provides indisputable proof of a customer relationship in case of litigation."

Company 6.

"... the application form itself is part of our tariff filed with the Public Service Commission of the State of New York and any changes therein are subject to the Commission's jurisdiction."

Company 7.

"... about 60% of the applications are handled over the telephone. . . . For small establishments the Company does ask for the name of the responsible person. For instance, the name of the baker, beauty shop, or laundry is not sufficient. The name of the owner or owners is also required."

Company 9.

"I hope to change this (the 'Application for Service') to an 'Application to Supply Service' executed on behalf of the Company, which becomes a contract when accepted by the customer, and which is good at any address on the lines of the Company, regardless of where he is located or moves."

Remarks

In presenting its request for information, the inquiring member-company, made the following advance observation:

"We have, in the past, and do still, ask each applicant to sign a card described as 'Application for Gas Service', and which sets out rules and so on governing gas supplied. However in the last analysis, the franchise, under which we supply gas, contains all the rules which apply, and these, and only these, are enforceable. The fact that a person applies to us for gas creates, in my opinion, an implied contract between the applicant and the gas company under the terms of the franchise, and I seriously doubt the usefulness of the individual application other than it has the moral effect incident to a person having 'signed something.'"

It may be said regarding public requirements that most gas companies are subject both to the terms of franchises and provisions of regulatory laws. In neither case are the requirements governing relations between customer and company usually stated in very specific terms or in detail, but very broad expressions which speak of fair and reasonable requirements are generally employed in franchises and regulatory laws. Requirements bearing on relations with customers are generally expanded by general rules promulgated by the regulatory body and also by provisions developed by each individual utility company and approved by the regulatory body. It appears to be generally accepted that

customers, as well as public utility companies, are bound by such requirements of law and by provisions in relation to service that have been promulgated or otherwise approved by regulatory authority. Still there are, no doubt, some obligations whose legal validity depends, in the last analysis, on the existence of a contract between the customer and the company.

Out of this situation, there have developed, sometimes, differences of opinion, especially between those who are more particularly concerned with procedure on which the company can always rely with respect to the legal rights of the parties and others engaged in administrative operation who desire to avoid burdensome or annoying details if such details can be dispensed with, without material detriment to any situation which is really important.

In the case of application and contract forms, it appears that the residential customer's "application" can be made to serve the purpose of a "contract", although perhaps somewhat loosely, by including in it some appropriate expression that renders

the customer's application and his use of service "subject to the rules, regulations and rates of _____ Company, as filed with the _____ Commission, at present in effect or that may be adopted hereafter."

It is apparent from the information gathered and presented above that several, and perhaps many, large companies have given this subject careful consideration and have gone so far in simplifying practices as to require no signed application or contract, in the case of residential customers, except under unusual conditions such as the need of long service connections. They evidently believe that the small size of the average residential accounts, in proportion to their large number, warrants the chances taken by omitting the requirement of actually signed agreements, and that what may be lost in a few individual instances of inadequacy of agreement between the company and the customer is much more than offset by reduction in operating costs and in smoothing the relations between many small customers and the company which serves them.

American Standards Association Wins U. S. Army Citation



Henry B. Bryans, president, American Standards Association, accepting award from Brig. Gen. Reimel. At left are H. S. Osborne, ASA council chairman, and P. G. Agnew, ASA secretary

A DISTINGUISHED service citation of the Ordnance Department of the United States Army was presented September 14 to the American Standards Association by Brigadier General Stewart E. Reimel, chief of the New York ordnance district of the Army, at a luncheon in the Waldorf-Astoria. The association and its affiliates were honored by the Army for their role in the mass production of ordnance material.

Henry B. Bryans, executive vice-president of Philadelphia Electric Co. and president of the association, accepted the citation, in the presence of representatives of 80 national trade, government and technical

groups, including the American Gas Association, that make up membership of the ASA. He said that more than 3,000 men and women gave up their time from their own work to serve on the various technical or special war committees to help in the work of standardization so that America's production could be turned against the Axis.

General Reimel, who recently returned from the South Pacific said that 2,200 major items are on the Army Ordnance procurement list and that nearly 400,000 different kinds of spare parts are needed to keep them in repair. He credited ASA with being largely responsible for providing standards that made possible the splendid production achievement of American industry. Since Pearl Harbor, he pointed out, "the development of more than a hundred emergency war standards has been undertaken by the association and 86 are now completed and in use."

H. V. Lindeman Joins Jacksonville Gas

HENRY V. LINDEMAN has resigned as principal engineer for the manufactured gas division of the Office of War Utilities, War Production Board, Washington, D. C., to become associated with the Jacksonville Gas Corporation, Jacksonville, Fla., as engineer.

Prior to joining WPB, Mr. Lindeman was commercial gas sales engineer for Metropolitan Edison Co., Easton, Pa.



George S. Jones, Jr. (left) Servel vice-president, receiving a citation from Dr. W. C. Oakie, War Food Administration

War Food Administration Honors Servel

SERVEL INC. and gas utility companies the country over were honored recently by the War Food Administration of the United States Department of Agriculture during Servel's weekly radio show that stars Miss Billie Burke.

At that time George S. Jones, Jr., Servel's vice-president in charge of sales, received for the company a citation from Dr. W. C. Oakie of the War Food Administration.

Over a period of more than a year Servel has spent liberally of its time and money in behalf of a campaign for "Nutrition in Industry." The Billie Burke Saturday morning radio show has only been a part. In addition, through gas utility companies throughout the United States, Servel has sponsored a campaign for improved industrial feeding.

Servel is also announcing at this time the continuation of Miss Burke's "Fashions in Rations" program for another three months' period. It is heard every Saturday morning at 9:30 EWT over all CBS stations.

"Old Faithful" Makes Adieu

OLD Faithful," oldest producing gas well in the history of Lone Star Gas Co., is retiring, along with 12 other wells in the Petrolia field of Clay County, after almost 35 years of operation. Appearing on the company's records as 1 Miller, "Old Faithful" was one of the first seven wells drilled in the now almost extinct field in 1909, when Lone Star received a charter to pipe natural gas from Petrolia to Fort Worth and Dallas.

The well, brought in November 14, 1909, was drilled originally to a depth of 1,544 ft. and it never was found necessary to deepen it.

The entire Petrolia field, in which there are only 24 wells now in operation with 13 of these to be abandoned immediately, produced a total of 93,133,000,000 cu.ft. to January 1, 1944. No wells have been drilled at Petrolia since 1932.

Gas Meter Used To Test B-29's

PRODUCTION of pressurized cabins for the new B-29 Superfortress, the Army Air Forces biggest weapon, was threatened with delay at Hudson Motor Car Company when the company was unable to obtain a \$4,000 testing apparatus to check the pressure. A Hudson engineer, formerly employed by the Michigan Consolidated Gas Company, solved the problem, however, by suggesting that a gas meter would do the trick. One was rented from the gas company and hooked up with hose connections and recording devices. Air force engineers were skeptical at first, but the precision meter has proved its worth to their satisfaction.

Ohio Gas and Oil Men's Bulletin.

Plant Suggestion Wins \$150 Award

AS a result of a suggestion which resulted in a substantial annual electric power saving, Henrique Pinheiro of the Harrison Gas Works, Public Service Electric and Gas Company has been awarded \$150 by the company's suggestion Committee.

In 1941 a circulating system for the washing of the interior of three large towers was installed consisting of a 60,000 gallon tank, a 1,000 gallon-per-minute motor-driven pump and a coagulation system. The tank is filled with water which is circulated through the tower cleaning the salt deposit from the grids. The return water containing dissolved salts as well as suspended matter is chemically

coagulated and clarified. As much as four tons of material have been removed from a tower in one week.

Experimental tests proved that the use of hot water reduced the washing time by two-thirds. The water was preheated by introducing low-pressure steam into the 60,000 gallon tank by means of a mixing tee, while circulating the water with a 40 horsepower driven pump.

Mr. Pinheiro suggested there might be enough power in the low-pressure steam to circulate the water in the tank as well as heat it, thereby saving the electricity to drive the pump during the preheating stage. The practical application proved satisfactory.

The Suggestion Plan provides for cash awards to employees who submit ideas that are found practicable.

Colonel Tuttle Retires

CLOSING a notable career in San Antonio public utilities, Colonel W. B. Tuttle retired as chairman of the board and general manager of the San Antonio gas and electric system on August 1. He will continue to serve as chairman of the city public service board.

Colonel Tuttle first became associated with the city's utilities in 1906 and during the next 30 years served successively as general manager, vice-president, president, and finally as chairman of the board of the San Antonio Public Service Company. Under his management, natural gas from the Three Rivers field was substituted for manufactured gas and the conversion of thousands of gas appliances was accomplished.

He is prominent in civic activities.



Victory canning display of the Wyandotte County Gas Co. which has attracted many customers to the company's display floor. Claudia Brant (left), home service director, and Phyllis Mattson, her assistant, have distributed much canning information in connection with the display which was designed by W. D. Rymus of the new business department

Philadelphia Gas Wins National Security Award

THE Philadelphia Gas Works Company has received the National Security Award presented by the Office of Civilian Defense for maintaining a superior standard of protection and security during the war. The award recognizes outstanding achievement through effective joint efforts to safeguard production, employees and property, and stands as a mark of distinction in the nation's war effort.

The presentation was made August 24 by Harry S. McDevitt, chairman, Philadelphia Council of Defense, at a special ceremony attended by a distinguished group of guests and employees of the company. Hudson W. Reed, president of The Philadelphia Gas Works Co., accepted the award and pledged that the company would continue its program of alert plant protection until the national emergency had passed.

Wallace G. Murfit, manager of district

offices for the company, acted as chairman and welcomed the assembly. Mayor Bernard Samuel of Philadelphia extended his greetings and commended the company for its achievement. A feature of the occasion was an address by Ray F. Riegelmeier, plant protection officer, Pennsylvania State Council of Defense. Music was furnished by the U.G.I. Music Masters.

A. G. A. Research Projects

RESEARCH projects of the American Gas Association 1944* is the title of a new booklet just issued under the sponsorship of the Coordinating Committee on Research, E. P. Noppel, chairman. It describes cooperative undertakings sponsored on behalf of the entire gas industry.

Most of the cooperative research is conducted at the Association's Laboratories in Cleveland and at the Institute of Gas Technology in Chicago. Other projects are conducted at selected laboratories.

Natural Gas Harmless to Plants

NATURAL gas was found non-injurious to growing plants and cut flowers, in experiments by Prof. Felix G. Gustafson of the University of Michigan.

Prof. Gustafson placed potted plants of tomato, coleus, sunflower, snapdragon, marigold and several other species, as well as cut flowers of tulip, carnation and stock, under bell-jars. In some of the bell-jars from one to two per cent of Texas natural gas, taken directly from the pipe line, was added to the atmosphere. Other jars were left with only ordinary air in them, as controls.

Although the plants were exposed to the natural gas for several weeks, none of them developed detectable injury in the one per cent gas atmosphere, and only two of the cut specimens of plants showed damage in the two per cent concentration.—*Science News Letter*, September 16, 1944.

NEW MEMBERS OF THE A. G. A.*

GAS COMPANIES

Dept. of Public Utilities, City of Richmond, Richmond, Va. J. R. A. Hobson, Jr.
Interstate Power Company, Dubuque, Iowa. B. F. Pickard
Kansas-Nebraska Natural Gas Company, Inc., Hastings, Nebr. S. D. Whiteman
The Lake County Gas Company, Willoughby, Ohio. J. R. Whitworth
Louisiana Public Utilities Company, Inc., Lafayette, La. S. W. Elbersson
Missouri Utilities Company, Cape Girardeau, Mo. H. B. Newman
Natural Gas Service Company, Coolidge, Ariz. E. F. Kellner
New Jersey Power & Light Company, Dover, N. J. H. C. Thuerk
Waxahachie Gas Company, Waxahachie, Tex. L. M. Stickney

MANUFACTURER COMPANIES

Heathbath Corporation, Springfield, Mass. F. W. Wilbur

INDIVIDUAL MEMBERS

James D. Alford. Public Service Co. of Indiana, Inc., Indianapolis 9, Ind.
C. W. Beckett. Southern California Gas Co., Monterey Park, Calif.
Ben L. Boalt. Perfex Corporation, Milwaukee 7, Wisconsin
Gilbert T. Bowman. Pittsburgh Equitable Meter Co., San Francisco 4, Calif.
Daniel J. Brogan. G. S. Blodgett Company, Inc., New York 32, N. Y.
Fred Howard Bunnell. Consumers Power Company, Jackson, Michigan
James M. Clarke. Servel, Inc., Washington, D. C.
W. O. Croft. Tennessee Gas Company, Nashville 5, Tenn.
Glen D. Curry. Hope Natural Gas Co., Clarksburg, W. Va.
Charles Judson Day. National Cast Iron Pipe, Div. J. B. Clow & Sons, Birmingham 2, Ala.
C. H. Delany. Pacific Gas & Electric Co., San Francisco 6, Calif.
Clarence W. Delorey. Quebec Power Co., Gas & Coke Div., Quebec, Canada
George G. Dormer. Binghamton Gas Works, Binghamton 20 F. N. Y.
Thomas F. Downs. Thomas F. Downs Engineering Co., Springfield, Mass.
Elmer F. Dunkak. The Davison Chemical Corporation, Baltimore 18, Maryland
Robert V. Dunkle. Pacific Gas & Electric Co., San Francisco 6, Calif.
John E. Echols. Pacific Lighting Corp., Los Angeles 14, Calif.
Josiah R. Elliott. The Harrisburg Gas Co., Harrisburg, Pa.
Herbert H. Etter. Eclipse Fuel Engineering Co., Wallingford, Conn.
O. R. Evans. Pacific Gas & Electric Co., San Francisco 6, Calif.
George Zieber Fencil. Koppers Co., Tar & Chemical Div., Pittsburgh 19, Pa.
Henry R. Flanagan. Philadelphia Electric Co., Philadelphia 5, Pa.
H. J. Friloux. Norco Gas & Fuel Co., Inc., Norco, La.
Herman L. Fruechtenicht, Jr. Consumers Power Co., Edmore, Mich.
John A. Gilbreath. Servel, Incorporated, Evansville 20, Ind.
C. E. Gill. Natural Gas Odorizing Co., Baton Rouge 2, La.
William Colden Guthrie. Gas Consumers Association, New York 1, N. Y.

* Does not include new members approved at Executive Board meeting, September 13. These will appear in a later issue.

Harry S. Hahn. The Ohio Fuel Gas Company, Columbus 15, Ohio
R. M. Hahn. Southern California Gas Co., San Gabriel, Calif.
R. A. Hansen. Pacific Gas & Electric Co., San Francisco 7, Calif.
Delmar Hasenritter. The St. Louis County Gas Co., Webster Groves 19, Mo.
Adolph E. Hatley. Central Indiana Gas Co., Marion, Ind.
J. S. Hays. Pacific Gas & Electric Co., Avenal, Calif.
Allen B. Hiatt. Phillips Petroleum Co., Bartlesville, Okla.
Frank Duane Howell. Dominion Natural Gas Company, Ltd., Brantford, Ontario
A. K. Ivanov. Government Purchasing Comm. of the Soviet Union in the U. S. A., Washington, D. C.
Walter Johnsen. New York & Richmond Gas Co., Staten Island 4, N. Y.
Clyde C. Johnson. Southern California Gas Co., Los Angeles 54, Calif.
R. L. Kaufman. Iowa-Illinois Gas & Electric Co., Ottumwa, Iowa
William Orval Keeling. Koppers Company, Pittsburgh 19, Pa.
Janette Kelley. Lever Brothers Company, Cambridge, Mass.
J. D. Killoren. The Laclede Gas Light Company, St. Louis 1, Mo.
Hubert S. Knight. West Ohio Gas Company, Lima, Ohio
Val Link, Jr. Westcott & Greis Inc., Shreveport, La.
Burgess Manchester. Metropolitan Utilities District of Omaha, Omaha 2, Nebr.
Elmo McCune. Sun Oil Company, Dallas 1, Tex.
Raymond William Murphy. Jersey Shore Gas & Heating Co., Jersey Shore, Pa.
Edmund J. Naughton. Servel Incorporated, New York 17, N. Y.
F. U. Naylor. Pacific Gas & Electric Co., San Francisco 6, Calif.
W. H. Noble. Republic Steel Corporation, Los Angeles, Calif.
Harold Parker. New York & Richmond Gas Co., Staten Island 4, N. Y.
Roderic Peters. Servel Incorporated, Washington 5, D. C.
E. Holley Poe. Washington, D. C.
H. A. Pool. Southern California Gas Co., Los Angeles 54, Calif.
John H. Pritchard. Texas Public Service Co., Port Arthur, Tex.
Max E. Rumbaugh. Southern California Gas Co., Inglewood, Calif.
Chester A. Shear. Standard Gas Equipment Corp., New York 17, N. Y.
Ruth Sheldon. Washington Gas Light Co., Washington 1, D. C.
William D. Spillett. Great Falls Gas Company, Great Falls, Montana
Virgil Stark. North American Utility & Construction Corp., New York, N. Y.
Daniel Glenn Stokes. Louisiana Public Utilities Company, Inc., Mansfield, La.
L. J. Strohmeier. Eclipse Fuel Engineering Co., Rockford, Ill.
Frederick W. Sullivan, Jr. Hydrocarbon Research Inc., New York 6, N. Y.
Gardiner Symonds. Tennessee Gas and Transmission Co., Houston 1, Tex.
W. R. Thomas. Southwest Natural Gas Co., Ada, Okla.
Richard E. Van Wert. Southern California Gas Co., Los Angeles 54, Calif.
H. A. Wallace, Jr. United Fuel Gas Co., Charleston 25, W. Va.
Buster Welch. Gas Equipment & Engineering Co., Lubbock, Tex.
Lawrence A. Wetter. Pacific Gas & Electric Co., Napa, Calif.
Kyle F. Williamson. San Diego Gas & Electric Co., San Diego 4, Calif.
William Edward Winn. Sun Oil Company, Dallas 1, Tex.
Howard B. Wylie. San Diego Gas & Electric Co., San Diego 4, Calif.
Fred E. Yerger. Universal C. I. T., Los Angeles 14, Calif.

Personal AND OTHERWISE

Walter E. Caine To Direct Enlarged A. G. A. Statistical Program



Walter E. Caine

APPPOINTMENT of Walter E. Caine as chief statistician of the American Gas Association has been announced by Ernest R. Acker, president of the association. He comes to the association from the Federal Power Commission where he was assistant chief of the Division of

Rates and Research.

In his new post Mr. Caine will direct all activities of the Statistical Department. Plans are now under way to rebuild this department which has been considerably depleted in recent years through loss of personnel. In addition to compiling national gas industry statistics for both the natural and manufactured gas branches of the industry, Mr. Caine will be in charge of an enlarged program of statistical analysis and market research.

Specialist in Utilities

Mr. Caine's entire career has been in the field of public utility statistical and rate analysis, a background which will be most valuable in his present position. A graduate with honors of the University of Buffalo in 1930 with a Bachelor of Science and Business Administration degree, he completed his formal education at Northwestern University where he received his master's degree in Business Administration in 1931. Title of his master's thesis was "Uniform Rate Areas in the Electric Light and Power Industry."

Entering the public utility field immediately, he was employed by the State of Wisconsin in 1931-32 to supervise the collection of statistical and other material relating to power resources of the State for a committee appointed by Governor LaFollette. From 1932 to 1938 he was associated with the Public Service Commission of Wisconsin, first as junior case investigator and finally as senior rate analyst in the Department of Rates and Research.

Mr. Caine joined the Federal Power Commission in the fall of 1938 after pas-

sage of the Natural Gas Act as rate analyst in the Division of Rates and Research. During 1939, he was loaned to the Department of the Interior to prepare recommendations in connection with Bonneville's rate schedules. The following year, during a leave of absence from the FPC, he served as associate director of research in the 20th Century Fund's *Survey of the Relations Between the Government and the Electric Light and Power Industry*.

Upon his return to the Federal Power Commission in 1940, he was appointed assistant chief of the Division of Rates and Research. In this capacity he assisted in a number of natural gas company rate investigations. Shortly thereafter, J. A. Krug, then director of the Power Division, Office of Production Management, borrowed his services and appointed him chief of the Negotiations Section. This work, carried on jointly by the FPC and the War Production Board, consisted of directing a joint staff of rate analysts in the analysis and negotiation of large electric power contracts which federal war agencies proposed to execute.

From October, 1942 until September, 1944 when he joined the American Gas Association's staff, he devoted full time to supervision of the FPC's war power contract program. A staff of 40 rate analysts and engineers were engaged during this period in the analysis of large power contracts of the War and Navy Departments, Maritime Commission, United States Housing Authority and Reconstruction Finance Corporation subsidiaries.

In addition to these activities, from 1942-1944 Mr. Caine taught a course in "Electric and Gas Utility Rate-Making" in the graduate school of the Department of Agriculture.

Black on Steel Board

JAMES B. BLACK of San Francisco has been elected a director of the United States Steel Corporation. Mr. Black is president of the Pacific Gas and Electric Company. He is the first Pacific Coast director of the steel company.

Pollard Joins Pacific Gas & Electric Co.



James F. Pollard

JAMES F. POLLARD, former president of the Seattle Gas Company and widely recognized "father of national gas advertising," is now with the Executive Engineer's Department of the Pacific Gas and Electric Company in San Francisco.

Mr. Pollard won the Charles A. Munroe Award in 1939 for his leadership in starting the gas industry's national advertising campaign. It was his forceful and intelligent presentation of the need for national gas advertising at the 1935 A. G. A. convention in Chicago that brought about the creation of a committee charged by the Executive Board to raise the funds. The campaign is now in its ninth year and has been a notable success.

Retirement Ends Notable Career



F. H. Nickerson

A"Clerk to vice-president" business career came to a close September 11, when Franklin H. Nickerson retired as a vice-president and trustee of Consolidated Edison Company of New York, Inc. That day was his sixty-fifth birthday and regulations of Consolidated Edison provide for retirement at that age.

Mr. Nickerson was honored September 8 by his company associates at a dinner at the Pelham Country Club in Westchester County.

All but three of Mr. Nickerson's forty-seven years of service with the Edison system companies have been in accounting, statistical and financial work. He was made vice-president in charge of finance and statistics of the Consolidated Gas Company in 1929, and since the 1936 mergers which brought about the present corporate set-up he has been vice-president of Consolidated Edison Company responsible for regulatory, statistical, tax and related matters.

Mr. Nickerson was born in Redding, Connecticut, and was educated in the public schools of that state. He started in 1897 as a junior clerk in the Consolidated Gas Company's Hester Street office where he was assigned to telephone and mail duties.

Miss Moomaw Resigns from A. G. A.



Miss Moomaw

HONORIA B. MOOMAW has resigned as secretary of the Natural Gas Department of the American Gas Association effective October 1. She has accepted a position in the natural gas consulting organization of E. Holley Poe in New York.

Miss Moomaw has been secretary of the Natural Gas Department since June 15, 1942. Prior to that time for a number of years she was secretary to Mr. Poe when he was associated with the American Gas Association as executive secretary of its natural gas activities.

Accepting her resignation with great regret, Major Alexander Forward, managing director, said: "Your service with the Association has always been intelligent, loyal, constructive and entirely satisfactory. We shall miss you, and sincerely wish for your future success and happiness."

Miss Moomaw is a graduate of Randolph-Macon Woman's College, Lynchburg, Va.

Elected Vice-President of Westchester Company



N. T. Sellman

NILS T. SELLMAN this morning (Tuesday, September 26) was elected a vice-president of the Westchester Lighting Company and of The Yonkers Electric Light and Power Company. He was also elected to the executive committee of the Westchester Light-

ing Company and to the board of directors of the Yonkers Company. Mr. Sellman, as assistant vice-president of Consolidated Edison Company of New York, Inc., has been in charge of electric and gas sales in New York City since 1942. He has been a director of the Westchester Lighting Company since 1942.

Mr. Sellman has been connected with Consolidated Edison System Companies for thirty-one years. He has long been a prominent figure in the gas industry and has the distinction of being the first person to receive the Charles A. Munroe Award of the American Gas Association, generally considered to be the highest award in the industry. He was extremely active in the development of the automatic gas re-

frigerator and also of the Certified Performance gas range. He played a leading part in establishing the American Gas Association Testing Laboratories at Cleveland, Ohio, and is a past chairman of the Laboratories' Managing Committee.

At various times Mr. Sellman served as chairman of important committees of the American Gas Association involving research, industrial and commercial projects. He was a director of the American Gas Association from 1937 to 1941, and chairman of the Commercial, now Residential Gas Section in 1933. He is also a former assistant secretary-manager of the A. G. A.

He is a member of the American Society of Mechanical Engineers, American Society of Heating and Ventilating Engineers, The Society of Gas Lighting and The American Society of Military Engineers. At the time of the World's Fair he was treasurer of gas exhibits.

Named Director



Hudson R. Searing

HUDSON R. SEARING, executive vice-president of Consolidated Edison Company of New York, Inc., was elected a trustee and a member of the executive committee at the regular monthly meeting of the company's board of trustees September 26.

He was also elected a director of the New York and Queens Electric Light and Power Company, the Westchester Lighting Company, and the New York Steam Corporation.

R. B. Harper Honored by American Institute of Chemists



R. B. Harper

ROBERT BRINTON HARPER, vice-president of The Peoples Gas Light and Coke Company of Chicago, and one of the leading gas chemists and engineers of the country, is the 1944 recipient of the Honor Scroll award which is presented each year by the

American Institute of Chemists to an outstanding member of the chemical profession.

The award is made to Mr. Harper in recognition of his distinguished service to the gas and allied industries as an organizer, executive and scientist. The Scroll is to be presented by Dr. H. I. Jones, chairman of the Chicago chapter of the American Institute of Chemists, at a testimonial dinner in the Morrison Hotel on October 6.

Mr. Harper was graduated from Armour Institute of Technology in 1905, with a Bachelor of Science degree in chemical engineering, and joined the Peoples Gas organization in June of the same year. He received the advanced degree of Chemical Engineer in 1909.

Beginning as an assistant chemist in a five-man laboratory, of which he became the head within a year, he has steadily increased the scope and value of research and testing within his company. Today, he directs the operation of eight research and testing departments which are outstanding in their field.

Mr. Harper played a leading part in

formulating plans for the American Gas Association Testing Laboratories, which he helped to direct from their inception to 1941. Representing the gas industry in the American Standards Association, he was instrumental in having 26 basic gas appliance standards accepted as "American Standards." He also cooperated in founding the Institute of Gas Technology.

He holds the Beal Medal Award, for the most outstanding technical paper presented to the American Gas Association during 1931. In 1933 he was elected a Fellow of the American Association for the Advancement of Science, and in 1936 became a Fellow of the American Institute of Chemists.

He received the Walton Clark Gold Medal of The Franklin Institute of Philadelphia in 1938, as an award in recognition of "his leading part in the development, supervision and direction of a research and testing laboratory of outstanding excellence in the gas industry; his cooperation personally, and through members of his staff; with the gas industry generally; and his own distinguished work in the chemistry and physics of the gas industry."

Three speakers will pay tribute to Mr. Harper.

George F. Mitchell, president of The Peoples Gas Light and Coke Company, will discuss "Harper the Man."

"Harper and His Achievements" is the subject assigned to Raymond M. Conner, director of the American Gas Association Laboratories.

Harry McCormack, director of the Chemical Engineering Department of Illinois Institute of Technology, will talk about "Bob Harper as I Know Him."

Martin Leaves A. G. A. To Join Servel



Edward R. Martin

APPOINTMENT of Edward R. Martin as chief marketing statistician for Servel, Inc., Evansville, Ind., was announced September 1 by Lyman Hill, sales research director.

Before going to Servel Mr. Martin was associated with the American Gas Association in New York for nine years as supervisor of statistical activities. While with the association, he carried on many national statistical studies, the most recent being the postwar gas appliance survey. He has contributed many articles to the A. G. A. MONTHLY.

He is a graduate of Pace Institute, New York.

Foster Advanced to Vice President

ANNOUNCEMENT has been made by the boards of directors of Public Service of New Jersey subsidiary companies of the promotion of Joseph T. Foster to be vice-president in charge of real estate and purchases and a director of these companies, succeeding George Barker who died August 23.

Roy S. Rogers was named purchasing agent to succeed Mr. Foster.

Starting with the company June 15, 1914 as a laboratory assistant in the electric department, Mr. Foster advanced to purchasing assistant to the vice-president in charge of real estate and purchases of all Public Service companies in 1927. Later Mr. Foster's title was changed to purchasing agent. He is a graduate of Columbia University.

Mr. Rogers started with Public Service as a buyer in the purchasing department in May, 1925. He was promoted to assistant purchasing agent a year ago. He is a graduate of Syracuse University.

Honored by King



Colonel McClenahan

COLONEL ROBERT W. McCLENAHAN, manager of the Philadelphia office of the American Meter Company, has been awarded by King George VI the Order of the British Empire for distinguished service in cementing ties between the Allied Nations.

Colonel McClenahan has now been on duty mainly in the Near East for two and one-half years without leave. A native of Cairo where his father was principal of the American College he speaks Arabic and knows Egyptian personalities, making his services as public relations officer of special value. He was present at the Cairo and Teheran conferences and has been to Moscow.

Retires After Half-Century in Utility Industry



Gray A. Strain

STARTING work in the gas and electrical industries at the age of 15, Gray A. Strain of Ithaca, New York has rounded out 50 years of service in those fields, 38 years with the New York State Electric & Gas Corporation of which he has been a vice-president since 1922. Formally re-

tiring September 25, he was honored by the company at a dinner Tuesday night, September 19 at the Victoria Hotel in Ithaca.

The son of Scot parents who migrated to New York City shortly before his birth on June 15, 1879, Mr. Strain first went to work as a boiler inspector in the Detroit City Gas Company's gas plant in 1894. From then until 1906 he was engaged in construction and operation of manufactured and natural gas plants and distribution systems for the company and Flushing (L. I.) Gas Company, Fulton (N. Y.) Gas Company and Bellevue (O.) Gas Company.

In 1906 he was employed by J. G. White Management Corporation, predecessor of the Associated Gas & Electric Company, as general superintendent of the gas plant and gas operations in Helena, Montana, remaining there until 1918 when he was transferred to Ithaca as general superintendent of what then was the New York State Gas & Electric Corporation. He was in charge of gas and electric operations in Ithaca, Cortland, Oneonta, Norwich and Liberty districts which then comprised the present company.

Made a vice-president in 1922, he has had part from then until the present in all major developments of the company. In many instances he negotiated for the purchase of companies which later merged or consolidated into the present company—New York State Electric & Gas Corporation. For the last several years he has specialized in regulatory matters.

Potter Honored on 50th Service Anniversary

ORMSBY F. POTTER, who completed fifty years with Public Service Electric and Gas and predecessor New Jersey companies was given a testimonial dinner by fellow-workers on September 15. He has been assistant general auditor, gas, Public Service Electric and Gas Company since 1936 and started in the utility business in Paterson in 1894 as a meter reader, clerk and collector.

Presentation of a diamond badge, emblematic of fifty years' service, was made to Mr. Potter by President Edmund W. Wakelee of Public Service. Mr. Potter is the thirty-seventh employee of the company to have received this fifty-year emblem. Of the thirty-seven, eight are still in active service, nineteen have retired on pension and ten are deceased. Gold badges, emblematic of twenty-five years' service, have been given 4,138 Public Service employees. Of these, 2,427 are still in active service, 639 have retired on pension and 1,072 are deceased.

AFFILIATED ASSOCIATION

Activities

Pacific Coast Gas Association Holds Successful Annual Meeting

THE 51st Annual Meeting of the Pacific Coast Gas Association, held in Los Angeles on September 13 and 14 was pronounced one of the most successful ever held on the west coast. Registrations reached a total of 776 men and women of the gas industry in spite of curtailment of the program and wartime restrictions on travel which prevented many out-of-town people from attending.

At the luncheon on Wednesday, O. R. Doerr, who was vice-president of the Association last year, and who is general sales manager of the Pacific Gas and Electric Co., was elected president of the Association to succeed E. L. Payne, president of the Payne Furnace and Supply Company. Other officers elected included H. W. Edmund, vice-president and general manager of the Coast Counties Gas and Electric Co., who was elected vice-president; and F. M. Banks, Southern California Gas Co.; R. G. Barnett, Portland Gas & Coke Co.; N. Henry Gellert, Seattle Gas Co.; and E. T. Howard, Gen-



P. C. G. A. President Payne



O. R. Doerr



H. W. Edmund

Newly elected P. C. G. A. Officers

eral Controls, all of whom were elected directors for a two-year term.

Highlights of the Wednesday luncheon were addresses by Col. Willard F. Rockwell, president of the Association of Gas Appliance and Equipment Manufacturers and George H. Smith, director of the National Gas Department of the American Gas Association. Colonel Rockwell stressed the present need for sane, practical guidance in formulating postwar plans. As a solution to the problem of reconversion to peace-time production, he offered a plan, which he said had been proposed to Congress, which would enable war contractors to provide unemployment compensation for their own employees.

Mr. Smith, in his first address since joining A. G. A., described the far-reaching gas industry plan for research and promotional development now being presented to the industry. He also referred to the growing interest of the Federal government in the natural gas industry and called for a solid front in solving the industry's problems.

Wednesday afternoon sessions included meetings of the Manufacturers' Section, the Women's Committee and the Board of Directors and Section Chairmen. Addressing the manufacturers' group, W. R. Teller, A. G. A. Testing Laboratory, revealed the latest developments in domestic gas research.

The Thursday morning program began with a Home Service Breakfast, at which Jessie McQueen, home service counsellor

of the American Gas Association spoke on the growing importance of Home Service. Her forceful and fact-filled presentation is reproduced in full elsewhere in this issue of the MONTHLY. R. E. Fisher, vice-president, Pacific Gas and Electric Co., speaking at this session, said the industry expected great things of Home Service in the postwar period.

W. R. Davis, Southern California Gas Co.; H. L. Masser, executive vice-president, Southern California Gas Co.; John I. Yellott, Institute of Gas Technology; and L. M. Klauber, vice-president and general manager of San Diego Gas and Electric Company, addressed the Thursday morning general session on a variety of timely and important subjects.

Concluding the general program at the noon luncheon on Thursday, LeRoy M. Edwards, vice-president and general manager, Pacific Lighting Corporation, addressed the group on "Industrial Southern California in War and Postwar, with Relation to Manpower and Its Effect on the Gas Industry." Mr. Edwards stated his belief that utilities and governmental agencies can work out a satisfactory agreement, but warned that recent moves to reduce utility rates may seriously hamper the utilities' ability to do their part in the postwar economic readjustments which will inevitably follow the cessation of hostilities.

The meeting closed on Thursday afternoon with a number of parallel sessions of the various sections of the Association. A keynote speaker before the Sales and Advertising Section, H. Vinton Potter, director, A. G. A. Coordinated Kitchen Program, brought the Pacific Coast men up-to-date on this important project. Mr. Potter's remarks are published in this issue.

Only social event of the meeting was the annual dinner on Wednesday night in the Embassy Room at the Ambassador Hotel. Officers for the coming year were installed and a variety program of entertainment was presented. Frank C. Packer, Payne Furnace and Supply Co., served as chairman of the Arrangements Committee.

Southern Gas Group Activities

FRANK S. KELLY, JR., president of the Southern Gas Association, has announced the appointment of a Safety Committee headed by James B. Harris, Arkansas Natural Gas Companies, Shreveport. Other members are: H. C. Hightower, United Gas Corporation; R. S. Huffman, Oklahoma Natural Gas Co.; and A. J. Naquin, New Orleans Public Service Inc. The committee will function as a subcommittee of the Distribution Committee, W. H. Ligon, Atlanta, chairman.

Tentative plans call for an annual

safety contest, standardization of accident statistics and reports, standardization of safety equipment, and other activities.

President Kelly also announced the formation of a Coordinating Committee to pass on matters affecting the Southern Gas Association, the Florida-Georgia Meters Association and the Mid-Southeastern Association. Three members of each group were appointed as follows: Southern—H. Carl Wolf, Atlanta Gas

Light Co., chairman; Frank C. Smith, Houston Natural Gas Co.; Charles B. Gamble, Birmingham Gas Co.

Florida-Georgia—Ted Bergman, Florida Power & Light Co., chairman; H. R. Cloud, Florida Public Service Co.; and A. H. Stack, Tampa Gas Co.

Mid-Southeastern—R. L. McCuen, Duke Power Co.; C. B. Zeigler, Public Service Co. of North Carolina; and J. S. Rider, Consolidated Utilities, Sumpter, S. C.

Extension Program of the School of Mines, West Virginia University, for Employees of the National Gas Industry, George McKinley.

Gas Supply in West Virginia, H. J. Wagner.

The Operation and Testing of Large Capacity Displacement Meters in the Field, John L. Galpin and Walter L. Smith.

The General Committee authorized the publication of Report No. 3, entitled "Designing and Installing Measuring and Regulating Stations," after minor changes are made. A special committee was named to investigate the subject of regulator freezing with S. R. Beitler serving as chairman. Practical Methods Committee No. 4 was established to prepare a set of convenient tables and graphs for gas men. C. A. Smith was appointed chairman of this committee.

To Resume Appalachian Gas Measurement Short Course in 1945



Group attending Aug. 25-26 sessions of the Appalachian Gas Measurement Short Course General Committee

THE General Committee of the Appalachian Gas Measurement Short Course held a two-day meeting on August 25 and 26 at the School of Mines, West Virginia University, Morgantown, West Virginia. One of the important events on the agenda of the committee was planning for the resumption of the Appalachian Gas Measurement Short Course which is normally conducted annually by the School of Mines, West Virginia University, in cooperation with the Public Service Commission of West Virginia, the West Virginia Oil and Natural Gas Association, the American Gas Association and the industries concerned in producing and marketing oil and natural gas and manufacturing metering and regulating apparatus in West Virginia and surrounding states.

Due to the effects of the war effort it became necessary to suspend the annual Gas Measurement Short Course during 1942, 1943 and 1944. At this meeting the general committee, after considering the satisfactory progress of the war, proceeded to lay tentative plans for the resumption of the Gas Measurement Short Course in 1945.

In addition to considering plans for the 1945 short course, technical sessions were held. At these sessions the following papers and reports were presented:

Designing and Installing Measuring and Regulating Stations. Report No. 3 of the Practical Methods Committee, C. B. Heist, Chairman.
New Developments in Measurement of Pulsating Flow, S. R. Beitler.

Pennsylvania Gas Association

AT a recent meeting of the council of the Pennsylvania Gas Association's council, it was decided that cooperation with the American Gas Association could be best secured by appointing committee chairmen for a term of approximately eighteen months, that is, from May to November of the following year. For the first six months (until November 1) each chairman thus appointed will have associated with him a co-chairman. On November 1, the co-chairman will become chairman of the committee. At the same time, the retiring chairman will become an ex-officio member of the committee and will also serve as a member of the corresponding American Gas Association committee (accounting, commercial, industrial, and technical). His term of office on this latter committee will be for a period of twelve months from November 1.

CONVENTION CALENDAR

OCTOBER

- Oct. 2-4 Controllars Institute of America Annual Meeting
Chicago, Ill.
- 3-5 National Safety Congress
Sherman, Morrison & LaSalle Hotels, Chicago, Ill.
- 5 American Gas Association Annual Meeting
Engineering Societies Building, New York, N. Y.
- 10-12 National Restaurant Association, Convention and Exhibition
Chicago, Ill.

Oct. 16-20 American Society for Metals, Convention and Exhibition
Cleveland, Ohio

NOVEMBER

- Nov. 13-16 National Hotel Association
New York, N. Y.
- 14-16 National Association of Railroad and Utilities Commissioners Annual Meeting
Omaha, Neb.
- DECEMBER
- Dec. 8 American Standards Association Annual Meeting
New York, N. Y.



Accounting SECTION

O. H. RITENOUR, *Chairman*

C. E. PACKMAN, *Vice-Chairman*

O. W. BREWER, *Secretary*

Proposed FPC Revision of Balance Sheet Instruction 6-E of Uniform System of Accounts

By C. E. PACKMAN

*Controller, Middle West Service Co.,
Chicago, Ill.*

BALANCE sheet Instruction 6-E as now written provides that upon the refund of bonds the balances of discount, and expense and the premium upon the issue refunded should be charged to earned surplus unless approval is given by the Commission to amortization over a subsequent period.

It is proposed that the System of Accounts be amended so as to permit discount, expense and premium associated with refunded bonds to be charged off immediately or to be amortized over the shortest period during which it is estimated the savings due to the refunding will aggregate the amounts of such items.

The proposed revision falls within the pattern outlined in Accounting Research Bulletin No. 2, issued by the Committee on Accounting Procedure of the American Institute of Accountants in September, 1939. That Bulletin (a) approves immediate write-off; (b) approves amortization over the unexpired term of the refunded issue; (c) disapproves amortization over the life of the refunding issue unless authorized by regulatory authority, and (d) approves acceleration over (b) if charged to income and if the amounts in any one year are not so large as seriously to distort the income for that year. Specifically the formula proposed by the Federal Power Commission would fall in (d) above.

New Pattern of Regulation

It should be remembered that when the above Bulletin was issued, September 1939, the accounting profession apparently believed that principles of accounting must be determined by reference to industry as a whole, although there is some slight concession to regulated industry in (c).

Since that time, however, a new pattern of regulation seems to have emerged in which accounting takes on a new role, very aptly described by Prof. H. B. Dorau¹ as follows: . . .

"...The first matter of importance is the changed place of accounting in the scheme of regulation. This change from a position of relatively little final im-

portance to the present place of overwhelming and almost final and conclusive importance, has been accomplished in a few years. Accounting is well on the way to becoming the almost single and exclusive implement of the regulatory process. . . .

"...Not only will the old established habits and norms of accounting procedure have to be subjected to scrutiny but the references to so called principles of accounting outside the utility field must be discontinued. It should be apparent that the results of accounting have now a totally different significance for public utilities than for non-utilities. The way in which an industrial concern accounts has little effect on the return which it earns outside of accommodation to the tax laws; in the utility industry it has every significance. It is now time to recognize that the conventions of public utility accounting are not to be tested by reference to unregulated industry accounting. It is not too late to develop a public utility accounting which finds its sanctions in the unique character and basis of utility enterprise. . . .

"...If accounting is going to be taken to have a meaning for regulation, the accountant must take the responsibility of making it mean what it is being said to mean. . . ."

The cost of money is a definite and important element in the rate of return to which regulated enterprise is limited. Under the fair value concept of determining the rate base the accounting for the cost of money is not of great significance.

But, if the fair value concept is to be rejected in favor of some variation of historical cost, the accounting becomes of "almost final and conclusive importance."

Therefore, it is important that the accounting for the cost of money should be consistent with the accounting for a rate base.

Heretofore the Federal Power Commission has strongly urged that discount, expense and premiums applicable to refunded issues should be charged off immediately. The Chief of the Commission's Bureau of Accounts has now made the recommendation that utilities be permitted, without specific approval on ap-

plication, to defer such items to a limited extent and to amortize them over a period determined by the interest savings accomplished in the refunding or the unexpired term of the refunded issue, whichever is shorter. If, as seems indicated, the accounting process is again to have important significance, it is necessary that the proposal be analyzed in the light of its relationship to consistency in accounting for the rate base.

Brandeis' Opinion

The lode star of those advocating the new scheme of regulation is the dissenting opinion of Mr. Justice Brandeis in the *Southwestern Bell Telephone* case.² That opinion is the corner-stone of the prudent investment theory. In it prudent investment as the rate base, is coupled with the actual historical cost of capital as the rate of return.

In that decision Mr. Justice Brandeis said:

"The necessary cost, and hence the capital charge, of the money embarked recently in utilities, and of that which may be invested in the near future, may be more, as it may be less, than the prevailing rate of return required to induce capital to enter upon like enterprises at the time of a rate hearing ten years hence. To fix the return by the rate which happens to prevail at such future day opens the door to great hardships. Where the financing has been proper, the cost to the utility of the capital, required to construct, equip and operate its plant, should measure the rate of return which the Constitution guarantees opportunity to earn.

"The adoption of the amount prudently invested as the rate base and the amount of the capital charge as the measure of the rate of return would give definiteness to these two factors involved in rate controversies which are now shifting and treacherous, and which render the proceedings peculiarly burdensome and largely futile."

It seems clear that the chief proponent of the prudent investment theory urged the historical cost of capital enhanced in the enterprise as the rate base and consistent therewith the historical cost of money as the rate of return.

The Chief of the Bureau of Accounts of the Federal Power Commission is an

¹ "Trends in Public Utility Regulation" presented to the meeting of Electric and Gas Industry Accountants, Cleveland, Ohio, April 1944.

² (262 U. S. 276, 289).

advocate of the original cost theory which he commonly describes as "prudent investment." Consistency should dictate adherence on his part to accounting for the historical cost of money.

In order to account for the historical cost of money it is necessary that all unamortized discount, expense, and the call premium applicable to refunded issues be deferred and treated by reference to the life of the refunding issue or issues. In other words, all discount and expense applicable to an original issue should be disposed of pursuant to an amortization program related initially to the life of the original issue; upon a subsequent refunding the unamortized balance applicable to the original issue, the call premium applicable thereto and the discount and expense applicable to the re-

funding issue, less the tax savings if any, should be collected in one account and treated by reference to an amortization program based upon the life of the new issue; subsequent refundings should be accounted for similarly. In no other way can the cost of money be accounted for on an historical basis.

The proposal of the Chief of Bureau of Accounts of the Federal Power Commission is quite different. In the following important respects: (1) It limits the amounts to be dealt with to those applicable to the issue being immediately refunded thus requiring immediate write-off of any items applicable to issues previously refunded. (2) It limits the period over which amortization may be spread to a period determined by reference to the net interest savings or the

remaining life of the refunded bonds, whichever is shorter. (3) It permits no consideration of excess profits taxes in computation of net annual interest savings but limits such consideration to normal and surtaxes. Furthermore it is not clear whether or not the proposed accounting shall be made retroactive.

It seems evident that the formula proposed by the Chief of the Bureau of Accounts of the Federal Power Commission is an arbitrary one that will produce accounting neither for the historical cost of money or the current cost of money. It is submitted that any accounting formula for the proposal in mind should be consistent with and conform to accounting required for rate base purposes, if the latter is to be on the same basis of historical cost.

Handling Partial Payments or "Cash Splits" with "Mark-Sensing" Tabulating Cards

Description of a practice adopted by the Consolidated Edison Company of New York, Inc.

THE use of punched cards for public utility consumers' billing and accounts receivable operations offers, as one of its particular advantages, a continuous control of the accounts receivable file as it is affected by the daily posting of cash through the removal of "paid" cards. Because each day's paid cards can be machine-tabulated or listed to verify their agreement with the originally reported total of cash to be posted, the remaining accounts receivable cards are continuously guarded against human errors which might occur in the daily posting operation.

One of the factors which enters prominently into the cash posting and cash

reconciliation operation is the handling of less than full amount payments or, as they are termed, "cash splits." As the term implies, where such a partial payment is received, it becomes necessary to "split" the original accounts receivable card by replacing it with two new cards—one for inclusion with the "paid" cards to equal the amount of payment, and one for return to the accounts receivable file for the unpaid balance. While some public utilities have adopted the practice of handling such partial payments as daily manual memorandum entries made to the original cards which are replaced by new net amount cards prior to subsequent billing, the Consolidated Edison Company of New York, Inc., has adhered to the conviction in its tabulating card consumers' billing operation that this method is less satisfactory in that it sacrifices the unique benefit which tabulating card operation offers of

the daily control of accounts receivable file through the listing of all paid cards.

In order to handle partial payments, the practice was followed for many years of manually key-punching the two new cards required. During the past two years, however, the Consolidated Edison Company has used in its Brooklyn Edison District an adaptation of mark-sensing tabulating cards for this operation with satisfactory results in terms of much speedier processing of partial payments, reduction in labor required, and almost total elimination of human error in the machine-processes involved.

The principle of mark-sensing is the pencil marking of horizontal lines in predetermined positions on tabulating-cards so that presence of the carbon deposited from the pencil will complete an electrical circuit when the card is passed through a reproducing gang-punch equipped with brushes placed so as to coincide with the predetermined pencil marking fields. The completion of the electric circuit actuates the reproducing gang-punch to punch into the tabulating card the numbers corresponding to the number positions originally pencil-marked with horizontal lines.

When a partial payment is to be posted to the accounts receivable file, the accounts receivable card for the proper account is withdrawn and a memorandum apportionment is made of the amount paid and the balance due, the total of which must agree with the amount of the original card as shown in Exhibit 1. The next step consists of the pencil-marking of two mark-sensing tabulating cards—one with pencil marks drawn through the numbers

Exhibit 1

[illegible][illegible]

corresponding to the amount of partial payment and the other with pencil marks drawn through the numbers corresponding to the amount of balance due. (See Exhibits 2 and 3.) The original accounts receivable tabulating card with the two pencil-marked tabulating cards immediately behind it are then passed through an International Business Machines Corporation's reproducing gang-punch equipped with the mark-sensing feature. The machine operates so as to be actuated by the passage of an electric current through the carbon deposited on the tabulating cards at the positions previously pencil-marked, and punches the corresponding numbers to the designated "Amount" columns of the cards. During the same operation, all other desired data are reproduced from the original accounts receivable tabulating card to the two new mark-sensing cards. The latter are then interpreted by machine to show the desired information along the upper edges as illustrated, and the process-operation is completed. While the above sequence of steps is described for one transaction, in actual operation an entire day's transactions are processed in a batch and several hundred transactions per day consume only a matter of minutes of machine processing after the pencil marking has been completed.

After the machine-processing, and as a precautionary measure only, the completed batch of machine-processed cards

are machine-listed on a tabulator to assure the agreement of the total of original cards with the totals of new cards. This operation not only proves the correctness of the batch, but also discloses any error in any individual transaction, thus guarding even against the remote possibility of a contra-error.

After the tabulator proof listing, which requires even less time than the reproducing gang-punch operation, the original accounts receivable cards are machine-sorted out from the batch and are held for possible later reference and then destroyed; the two new cards are concurrently machine-sorted into their appropriate groupings. The partial payment cards are included in their proper position with the day's paid cards and the cards for the balances due are returned to their proper positions in the accounts receivable file.

This process has been found very satisfactory from a machine-processing standpoint, permits of retaining the integrity of the daily cash posting control, eliminates a former "bug" which arose when a large number of partial payments was included in a heavy day's receipts, and offers a particularly interesting example of the possibilities of "mark-sensing" as applied to electric tabulating card operation.

Are you retarding the war effort or are you buying all the War Bonds you can regularly?

Eight-Point System on Job Relations

AN eight-point set of fundamentals for a better employer-employee relationship was outlined by Howard M. Dirks, industrialist of Hagerstown, Ind., at the ninth institute of industrial relations of the National Association of Manufacturers, September 14, as follows:

A considerate and orderly hiring procedure.

A wage schedule in harmony with the general wage levels for similar work in the community and the industry.

Definite procedures for promotion, lay-offs and dismissals.

Specific rules and regulations pertaining to hours, overtime, vacations, discipline, etc.

An orderly step-by-step procedure for prompt and impartial consideration and adjustment of misunderstandings and grievances.

A specific program and definite policy for the selection and training of supervisory personnel.

Keeping employees informed on company policies and problems affecting employment relationships and the continuity of employment.

A written statement of company policies and practices, clearly stated and defined, so that all individuals in the organization may fully understand the terms and conditions that refer to the employment relationship.

Utilities Maintenance

ELECTRIC power, water, natural and manufactured gas and central steam heating public utilities have been granted the right to make certain minor plant additions and extensions up to \$10,000 in material cost, without obtaining approval from the WPB's Office of War Utilities. The limit formerly was \$1,500.

At the same time, the requirement that purchases of certain critical items be approved by Regional Utility Engineers has been revoked.

A.G.A. Research Fellow
on New Project

GEORGE F. RUSSELL, recently appointed assistant professor on the chemical engineering staff of the University of Oklahoma, Norman, held the American Gas Association's natural gas fellowship at the university for the past two years.

He is now working on a research project involving the "Drying of Natural Gas with Alumina at High Pressures." A detailed study is being made of drying rates, drying capacities, fluid flow friction loss, selective adsorption, and regeneration of alumina at high pressures in contact with a condensate saturated natural gas.



Residential SECTION

C. V. SORENSON, Chairman

J. H. WARDEN, Vice-Chairman

J. W. WEST, JR., Secretary

The Growing Importance of Home Service



Jessie McQueen

MY interpretation of the subject "The Growing Importance of Home Service" is what home service can do for your company—today and tomorrow. Its importance in wartime to the community and the company, its flexibility in dramatic application high-

lighted in 1944, its support of a variety of programs, its public relations value in the minds of your customers, and now, its growing importance in postwar—in kitchen planning, sales plans, training courses, school contacts, and dealer relations. That, with a "cost evaluation" to cinch it. Surely, it has a future!

Importance in Wartime

Its importance in wartime is borne out by so many statements within and without the industry that I believe we can save time by granting that side of the debate. Who else in your company could have fitted into so many publicized government programs of nutrition and conservation of fuel, food and equipment;—made twelve million customer contacts through the gas industry in one war year;—and come through with so many favorable comments of work accomplished? Each of you has this evidence in your own company. Dr. Sebrell, associate director of the nutrition programs branch of the War Food Administration, said last year at the American Gas Association Convention: "The utilities through their home service departments are doing a magnificent job in supporting the more than 3,000 local and county nutrition committees that have been formed."

From this instance, with more to support it, the gas industry can be proud of its home service war record;—and be glad it had the foresight to give it support and provide long since the physical set-up of auditoriums and kitchens which were a "natural" in creating a headquarters for group meetings for demonstrations and for consumer education centers.

Presented at Pacific Coast Gas Association's Annual Meeting, Los Angeles, Calif., Sept. 13-14, 1944.

By JESSIE MCQUEEN

Home Service Counsellor, American Gas Association

For the first two years of the war, nutrition was new and colossal—everybody had suddenly discovered food values and the men were interested as they had never been before; but, along with many others, home service welcomed the shot in the arm that came along with food rationing. It too was something else brand new in this country, and then our theme was "How to be Healthy and Happy 'Tho Rationed."

But that too needed stimulation to keep up interest, and when things were slipping this last year, when women's thoughts were elsewhere with their boys overseas and their war work, home service came in for one of its finest contributions—the dramatic application. Drama has always been important in home service and played up to in demonstrations and in recipe material. Of course, we must grant it has been done to varying degrees because some people even yet don't appreciate its value. I take off my hat right now to you people in the western companies—nowhere else has it been done so effectively and that goes all through the companies' operation—adver-

tising, sales promotion, public relations contacts.

The "Road Show," or the two-lesson course "Look Who's Cookin'," of the Southern California Gas Company, which has proven so popular in high school assemblies in this area, is a lead-off in drama. The objective is the basis of our new A. G. A. booklet "Home Service Programs For Young America."

In wartime, the young people in many homes have new responsibilities. With mothers in war work, the problems of food choices, marketing and preparation have confronted the children of high school age, many of whom haven't been registered in home economics courses, and the training of most boys in school and out hasn't fitted them for the big task of preparing meals. So, the gas company, with its trained home economists, devised the short courses designed in demonstration-skits form for presentation during assembly periods. The presentation in 20 junior high schools before 23,000 students has led to requests for so many other presentations, with bookings into January, 1945, that a second road show will be set up this fall. The city supervisor of home economics indicated to me the popularity of this program among the students and the results



Whether in home economics laboratory, assembly hall, or in the company auditorium, the dramatic presentations by the gas industry home service representatives are fast becoming an important supplementary educational program



Stage set for "Gremlins in the Kitchen." Note Hasty, Wasty and Sly hanging on the gas appliances

of better nutrition which were already showing up.

And then there are Hasty, Wasty, and Sly, the little Gremlins appearing first in the fertile minds of the Oklahoma Natural Gas Company—the Gremlins who have gotten into the kitchen and played pranks on cooks and tried to tear down good equipment. A lecture demonstration built around their antics, with emphasis on the care and use of gas equipment, was planned first for girls taking home economics in high schools, but requests grew so fast that in a short period of months it was successfully presented before ten thousand students and some two hundred lectures were given through the area in Oklahoma served by this company. Here's a sample of the technique:

"Hasty hangs around the refrigerator. He makes you hurry so fast, you have to go back and do over or undo all the tasks you have done carelessly. Wasty causes you to waste fuel. He prompts you to neglect utensils. He tips over the apple pie in the oven until the juice runs out and makes cleaning hard. He hangs on the oven door. Sly disturbs the routines, makes you careless when shopping so that you buy foods too high in point value and which cost too much. He hangs around the water heater because it is so tall, and he likes to exhibit his ability at sliding up and down tall things."

The idea is that the gremlins are to be held responsible and blamed for neglect, lack of knowledge, etc. concerning food values and for abuse to equipment through improper care and use.

Humor appears more frequently in recipe material. A number of food preservation booklets came out this summer with tiny line sketches to lighten the book, but also to simplify the method described,—and presented in a quick convincing manner. Cartoons and line drawings are proved selling tools. Look at "Tub Talk," the booklet used in two Southern California companies, or the recipe pages of the Lone Star Gas Company, where a member

of the home service department sketches pictures.

And wouldn't you know, we have a Houdini in our midst? Kathleen Conrad, of the home service department of the Minneapolis Gas Light Company, combines her hobby and profession into "Magic With Gas." Equally adaptable to all the special campaigns to "Save Fat," "Clean Your Plate," selling war bonds and planning Victory gardens, the magic touch was there. For instance, for a city-wide promotion, "Clean Your Plate," her demonstration included showing how the bits of food left on a plate can, with a little gas magic, become a vegetable garden and give proof to her statement. "We should eat every bit of food on our plates and with the extra energy grow Victory gardens." You may ask what is the purpose of this dramatic application,—to glamorize home making and it's a justifiable form of presentation.

Looking Ahead

And from that magic, let me look in the crystal ball and see "what of the morrow." To grow, we need something to grow from, and this brief summary, *you* know, only scratches the surface of what I could say if I had hours in which to do it.

We have postwar plans, even though no mention was included in the recommendations of the A. G. A. Postwar Planning Committee. An enlarged sales force was recommended, but one rather startled member replied to my fussing, "We took home service for granted!" Well, that's good in a way—but not too flattering. I would be more bothered about it except I realize the members of the Postwar Planning Committee are good friends of home service and included it in two of the reports, but it is one example that we won't ever be able to slacken our efforts in telling the people in our own companies what we are doing, and surely that has its value in keeping us on our toes.

I have just read an Annual Report of

one home service department. I was impressed with the variety of contacts and wondered, on a basis I once heard of, if we could set up a money scale of evaluation. Would it be worth twenty-five cents to your company for each person in a group or at a demonstration who learned of your company, of gas as a fuel, of the best care and use of your equipment? Would it be worth \$2 for each personal contact—a call in the home of a customer to explain your equipment or in answer to a complaint on service or equipment? Would it be worth a dollar for every other personal contact in a committee group, like the special groups signing up for a series of Red Cross lessons working towards a certificate?

Money Value of Home Service

Of the sixteen types of contacts in this company, seven are on the individual basis. Dividing all contacts by the number of home service people in the department, gave us for *each member* of that department 13,259 contacts and the money evaluation of \$10,697. That number of contacts is in a war year when there are not so many people attending demonstrations and it is not possible to make as many personal calls in the home.

I was so interested in this breakdown that I looked over five other reports and, on the same basis, found that evaluation was very similar—between \$7,000 and \$10,000 and their average number of contacts and activities so comparable as to make this seem quite convincing. In checking with the first company mentioned, I was given the total cost of the home service department which included not only salaries, but rents, cars, printing material and general operation. Dividing the annual budget by the number in the home service department gave a figure less than one half the money evaluation of contacts.

Thus home service is surely not a luxury. It has paid its way and is on the right side of the ledger. Knowing that we can't or don't want to, place a cash

value on public relations or on our service, but just as one vague form of evaluation, home service just can't be taken entirely for granted. I had another motive, too. In the postwar period when there will be a greater demand than ever for home economics graduates in business and the professional fields of teaching and Extension Work, utilities can with this leeway, compete in the open market for the best trained and personable home economists who are needed for home service work.

What is our postwar job? Nutrition and food information will continue important. It's our duty to continue our influence in the goal of a nation fed as well in peacetime as in war. We need to keep faith in the fine organization of the Nutrition Committees and work their programs in with our own promotion. In the postwar plans of our companies, home service should assume a special responsibility. Of all the employees, we have had one of the best opportunities to know our customers, their plans and desires. And the scope of these wartime contacts should be analyzed for their sake and ours!

Women in Postwar

While no prophecy can be guaranteed on what women will do in postwar, still we believe that the war has intensified their interest in consumer problems—they want to know how to buy and how to more intelligently use the equipment which, because of its very scarcity the last few years, has made its importance felt in every customer's mind. Since we will be paying for this war for a long time, they will need to know these things to make both ends meet.

The "New Yorker" started off its "Talk of the Town" a week or so ago with, "We are steeled against the postwar, and it

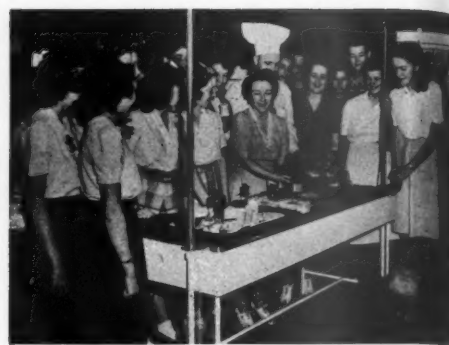
(Continued on page 432)



Down the aisle with his raw material comes "Merry Mac" McLeary during the show "Look Who's Cookin'!"



Before letting Merry Mac into the secrets of culinary success Dorothy makes sure his hands are clean



Dorothy Schwartz at the mirrored demonstration table surrounded by a group of school students

Gas Road Show Brings Down House

IT may surprise you to learn that vitamins can be as interesting as a Bob Hope radio program or a Walt Disney film, but it's no surprise to hundreds of children in the Southern California public schools. They know!

They know, because they've seen the demonstration put on by merry "Mac" (D.C.) McLeary and his "Gang," consisting of a group of attractive girls from the Southern California Gas Company's Home Service Department. The purpose of the demonstration is to instruct boys and girls in the schools in the essentials of planning well-balanced meals, to help them in selecting proper food from the cafeterias, and to set them on the path of proper nourishment; but it's a misnomer, really, to call it anything as cut-and-dried as a demonstration. It's as easy and informal as a picnic.

The idea of presenting cold facts as good entertainment was thought up by the Home Service Department and was worked out by the girls, themselves; girls young enough to remember the boredom of their own schooldays.

So—as the mirrored demonstration table is shifted on to the platform of the school auditorium—it begins with a wisecrack. "Today," says Dorothy Schwarz, "We are going to tell you about the six basic food groups."

"What's a basic food group?" asks "Mac," playing it dumb.

"Don't you know?" gasps Dorothy. "I thought you were educated." Or something to that effect. Already, it has produced a ripple of amusement. Somebody is getting "ribbed," and, for once, it isn't they.

The horse-play doesn't end there, by any means. "What did you have for breakfast, 'Mac'?" asks Dorothy. "Mac" confesses he's had nothing but coffee and toast. "Oh, one of those," says Dorothy, in derision. "How do you feel?" "Mac" confesses he feels tired, and hungry. He is scolded and

admonished to eat a good breakfast to keep up his vitality.

Of course, the serious side isn't neglected. At the end of the second session, Corris Guy grades the day's meals on the chart and it is seen that in the meals planned 100% supply of green and yellow vegetables, citrus fruits, cereals, milk products, and butter or fortified margarine have been made into appetizing menus.

The only trouble with it is that the children are having such a good time, the mothers are asking to come, now. And pretty soon, they will be bringing in the fathers, too.

—Newsweek Pictorial

Roper Booklet Peeks into World of Tomorrow

A COLORFUL new booklet "A Peek into the Amazing New World of Tomorrow" has been mailed by the Geo. D. Roper Corporation, Rockford, Illinois, to thousands of gas companies and dealers, as well as to many firms in the architectural, building, appliance and associated industries.

The new booklet is a story book in appearance. An animated princess character scampers gayly through the pages looking at the amazing new airplanes, automobiles, furniture, homes and other miracles of tomorrow.

In her journey she suddenly arrives at the location of six new gas kitchens which will come into being soon after the end of the war.

Although some of the general illustrations may seem somewhat fanciful, the colored renditions of postwar gas kitchens are quite practical. Each kitchen shown is one that can actually be built soon after the close of hostilities.

The book is designed to stimulate the thinking of the gas industry and dealers.



Industrial & Commercial Gas SECTION

CHARLES G. YOUNG, Chairman

HARRY K. WRENCH, Vice-Chairman

EUGENE D. MILENER, Secretary

Convection vs. Radiant Curing of Industrial Finishes

DURING the past few years a continuous debate has been in progress over the speed of curing metal finishes. Claims and counter-claims have been made by the proponents of the radiant and conventional convection types of finish drying equipment. The result is a considerable confusion in the minds of plant operators who are attempting to modernize their equipment to provide optimum curing speed. It is our purpose to discuss here the drying of metal finishes by radiation and by convection, paying particular attention to the relative speeds with which the cure may be completed.

Radiant energy for such an operation can be produced by radiant gas burners or through the use of infra-red lamps mounted in special reflectors. Convection heating is applied by means of a suitable source of heat together with the necessary fans and duct system to pass hot gases rapidly over the work surfaces. Following its contact with these surfaces, the hot gases may be vented from the oven or recirculated through the heat source and again passed over the work. Modern convection ovens utilize an automatically-controlled, fuel-fired air heater mounted adjacent to the oven as their heat source. Normally the major portion of the hot gases are recirculated, only a sufficient volume being vented to properly exhaust the vapors given off by the finish.

The recommended ventilation is 9000 cubic feet per gallon of volatile entering

By CHARLES C. EELES

*Industrial Engineer
The Ohio Fuel Gas Co., Toledo, Ohio*

continuous ovens and 350 cfm per gallon of volatile carried by each load in batch ovens. An equal amount must be vented from ovens heated by radiant gas burners. Installations heated electrically by means of "Infra-Red" lamps should be likewise provided with an amount of ventilation sufficient to carry off these volatiles. Enough fresh air to complete the oxidation of finishes must be introduced into all ovens where this type of chemical reaction is required to complete the cure.

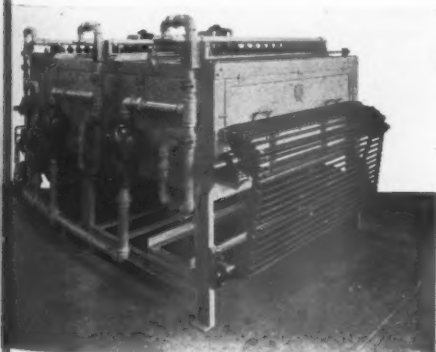
Generally metal finishes are divided into Lacquers, Synthetics and Oleoresins. Combinations of these may likewise appear in a single finish. Those finishes commonly known as "japans" or "varnishes" are Oleoresins. Each of the three general classes has its own curing method and characteristics. Lacquers dry through evaporation of thinner. Synthetics cure by polymerization and evaporation of thinner. Oleoresins cure primarily through oxidation, but they likewise require polymerization and evaporation of thinner.

The make-up of a specific finish establishes its method and time of drying. For a given finish—other factors being equal

—curing time decreases as the temperature rises. The two factors limiting the speed of curing then become: first, what temperature will the finish and work stand without discoloration or other undesirable effects, and second, how rapidly can this temperature be reached.

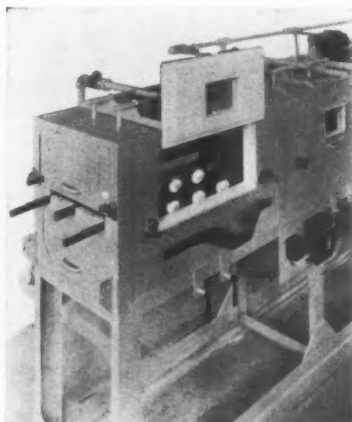
To provide a background broad enough to substantiate our discussion of this subject, the opinions of sixteen representative oven builders, paint companies, gas-burner manufacturers, and industrial gas engineers were obtained. The ideas expressed by this group were remarkably uniform.

It is universally agreed that each finish has a fixed curing time at every temperature, provided there is a sufficient volume of hot air being circulated to carry off the thinner vapors and complete oxidation when the latter is necessary. This time-at-temperature relation varies widely between types of finish and between different finishes of the same type, but for an individual finish and a fixed temperature, the time required is constant. The method of heat application (radiation, conduction or convection) has no effect on the time-at-temperature relation. One type of Oleoresin may require 90 minutes at 400° F. and 60 minutes at 500° F. to complete its cure, a certain synthetic takes 40 minutes at room temperature and 15 minutes at 200° F., while one lacquer will dry in 10 minutes at room temperature and but 2 minutes at 100° F. Suitable drying agents may



Selas Corp. of America

Gas radiant drying oven for specialized wallboard. It uses 84 ceramic-cup radiant heat sources above as well as 3 ceramic-ribbon burners below the charge and 2 circulating fans for convection control



Selas Corp. of America

This continuous radiant gas oven is for drying chemical pastes in storage battery manufacture. It has radiant burners located both above and below the traveling charge and has a high efficiency rating



Gehrich & Gehrich Inc.

Convection-type continuous conveyor gas oven for either hand or automatic dipping of various sized and shaped metal parts. The unit includes automatic dipping, dripping, baking and cooling

also be added to the basic material to decrease curing time. Regardless of these several variables the time-at-temperature curing cycle is definitely fixed by the chemical and physical make-up of the finish. This cycle will remain unchanged no matter how the oven is heated.

If the physical and economical limits of finish, type, composition and temperature have been reached to minimize curing time, the remaining variable which can aid in shortening the over-all cycle is the speed with which the material can be brought to maximum curing temperature. Here, then, is the heart of the entire problem.

Methods of Heat Transfer

Heat is transferred by difference in temperature from a higher to a lower temperature point. The three basic methods are conduction, convection and radiation. Conduction involves merely the transfer from the hotter portion to the colder portion of a single body or structure. Conduction is not generally an important method of heat transfer in this type of process. In the current problem, therefore, the major portion of the heat transfer is either by convection or radiation. The discussion will be limited to these two.

Wherever a difference in temperature exists between two bodies there is an exchange of radiant energy. The rate at which this exchange takes place increases very rapidly with an increase in temperature difference. It is always proportional to the difference of the fourth powers of the absolute temperatures. Thus heat is transferred very rapidly from the face of a radiant gas burner at a temperature of say 2500° F. to an object which is to have its finish cured at 275° F.

The speed of heat transfer is likewise proportional to the receiving area. Therefore, to take full advantage of radiant energy the heat source must be able to "see" every part of the receiving body evenly. Exposing a narrow edge of the work to the radiant burners will not allow the transfer of very much heat by radiation. If an even cure results on work thus exposed then it is obvious the bulk of the heat has been transferred by convection.

The rate at which radiant energy is picked up by the work likewise depends upon the type and character of its surface. A perfect black body is the ideal radiating and radiation absorbing medium. Therefore, lusterless black finishes or surfaces will absorb radiant energy far more rapidly than material covered with a glossy white or aluminum finish. So if an oven will cure various colors (from dark to light) of the same basic type of finish in the same time, with identical oven loadings and temperatures, it is apparent that convection is probably the principal method of heat transfer.

When we assume that the radiant burner source is held at a temperature of

2500° F. or higher and that the oven is designed to heat the work and finish only from room temperature to say 275° F., it is seen that the very high rates of heat transfer by true radiation may very quickly cause overheating. Automatic control, therefore, can best be handled on a time, rather than temperature, basis. This, then, means the time cycle of the conveyor in continuous ovens or the time between loads in batch ovens must be changed as the color is changed. For this reason it becomes rather difficult to load materials of several different colors or finishes at the same time in true radiant ovens.

It can be concluded, therefore, that where manifolds of radiant burners are mounted along the bottom or lower side walls of an oven and the work is passed through, or so located that the radiating surfaces of the burners do not "see" equally every portion of the work pieces, then the principal heat transfer is really accomplished by convection rather than radiation. Likewise, if various colors ranging from white to black using the same type of finish can be baked in equal lengths of time, then here is another definite proof that the main transfer is not by radiation. An oven heated with merely a few radiant burners, the total radiating surface of which is relatively small compared with the wall surface or the total surface to be finished, delivers only a small and probably unimportant portion of its heat to the work by radiation. Convection is really the principal heat transfer method. Therefore, modern ovens of this type employ one or more high volume recirculating fans plus some positive means of discharging the proper number of cubic feet of oven atmosphere to vent the thinner vapors driven off of the finish.

Convection Oven Heating

As stated earlier, the modern convection oven uses an externally mounted air heater where the fuel is burned. Fans force the recirculated oven atmosphere plus the proper amount of fresh air through the heater. This hot air then returns to the oven through suitable duct work designed to distribute it evenly over the surfaces to be finished. While in contact with work and walls, the air temperature is reduced. The heat thus given up represents the amount delivered to the oven to heat the work and supply the normal losses through walls, door openings and so forth. The cooled air is then returned to the air heater for reheating after which the cycle is repeated.

With the convection system, the rate at which heat can be delivered is proportional to the difference between the temperature of the hot air delivered and the work temperature; and to the rate at which this hot air is delivered to the oven measured in pounds per unit of time. Until recently the temperature difference has been limited to say 50 to 100° F. in order to insure absolute uniformity with no

chance of overheating. Although high hot air deliveries have been employed they have by no means reached a maximum.

By moving the heat source from an external air heater (as in the modern convection oven) to a point inside the oven (as in an oven heated by radiant or pipe burners) the tendency is to increase the differential between oven temperature and work temperature since the burners, having a flame temperature of over 2500° F., are separated from the work by only the air in the oven. Some advantage in heating speed has thus accrued to this type oven in the past because designers of convection units have been extremely conservative in their use of large temperature differentials and high hot air deliveries.

Present practice in convection oven design is stepping up air volumes and temperature differentials. As these two factors become greater, heating rates are increased. By this means work can be brought to temperature more rapidly than is possible with either present convection ovens or ovens heated by a large number of radiant gas burners located on the oven floor. In fact, heating speeds can be so great that it is no longer possible to rely on oven temperature control to effect a proper cure. Time in the oven then becomes the governing factor.

Time Cycle

The time required to complete the cure is dependent principally on time-at-temperature once the paint analysis and proper baking temperature have been established. Shortening of the cycle, therefore, actually means bringing the work to baking temperature more rapidly. Proper application of the higher temperature differentials and greater volumes of circulation discussed above, will, it is felt, provide convection ovens whatever increase in heating speed may be reasonably required by industrial finishers. Utilizing this method retains all the desirable features of convection ovens. Principal among these is the ability to provide fool-proof flame failure protection through the use of a single approved flame unit and relay on each air heater. The possibility of providing one hundred percent flame failure protection for a large number of individual burners mounted some distance apart on the floor of an oven is extremely difficult.

The convection oven can have thermal efficiencies as high as those with radiant or pipe burners on the floor and equipped with fan recirculation. Principal heat losses are from external ducts, hot fan casings, air vented to carry off thinners, door openings, air heater casings, and oven walls. The first four of these will be approximately equal for both types. Of course, ovens heated by internal burners have no air heaters but this loss is probably more than offset by the fact that convection ovens may be somewhat smaller per unit of production.

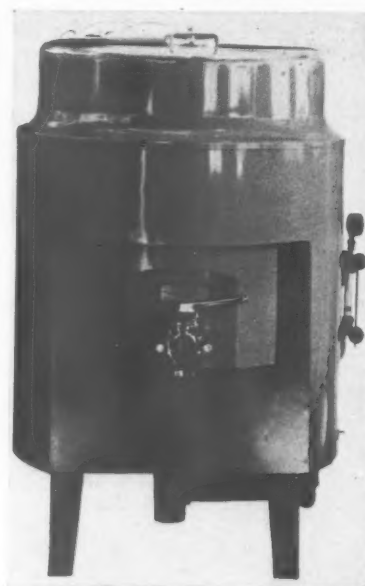
Where all parts to be finished are of a

uniform size, shape and cross section, and batteries of radiant burners may be so mounted that they "see" equally every portion of the piece, it is entirely feasible to take advantage of the high heating rates provided by radiant gas burners. This would apply, for instance, to flat sheets where burners could fire directly at their large surfaces from close range. Under these conditions the oven is truly "radiant" since the major portion of its heat delivery is by this means. For special purpose units

of this nature the use of radiant heat often provides important advantages.

To handle miscellaneous jobbing work or a variety of different parts, full convection-type ovens are more adaptable. They will give, if properly designed, just as rapid curing as ovens employing a number of radiant burners on the bottom supplemented by a certain amount of fan recirculation. In addition the full convection oven can be provided with more fool proof flame failure safeguards.

Modernistic Design of New Gas Appliances



For hotels, restaurants and institutions whether they have an independent steam supply or not, direct gas-fired steam-jacketed kettles (illustrated above) and direct-fired steam-jacketed coffee urns provide 100% controllable, efficient, and rugged service. This picture shows one of the latest products of the designers of Royce L. Parker, Inc., Bellwood, Ill. Sturdy good looks are combined with engineered direct gas heating

American Gas Association Industrial and Commercial Gas Advertising for October

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full page advertisements will appear in the trade and business magazines listed below during the month of October. These advertisements are prepared in cooperation with the Committee on National Advertising as a part of the industry's national advertising campaign.

MAGAZINE	THEME
General Manufacturing	
BUSINESS WEEK (Oct. 7— $\frac{7}{8}$ page)	From Bazooka to Baby Carriage.
MODERN INDUSTRY (1/2 page)	"Infra-Red" Drying by GAS cuts time nearly 90%.
INDUSTRIAL HEATING	Memo to Mr. Post-War Planner:
Metals Industry	
METAL PROGRESS	For a head start on the field. . . . Plan on GAS when Re-converting.
STEEL (Oct. 16)	Memo to Mr. Post-War Planner:
THE IRON AGE (Oct. 5)	What do you require in a fuel for Industrial Heat Treating. . . .
METALS AND ALLOYS	
Ceramic Industry	
CERAMIC INDUSTRY	"Infra-Red" Drying by GAS cuts time nearly 90%.
Glass Industry	
GLASS INDUSTRY	Depend on GAS . . . to help win your POST-WAR goals.
Chemical Field	
CHEMICAL & METALLURGICAL ENGINEERING	Fitting GAS heat-treating to each specific job.
Hotel and Restaurant Field	
AMERICAN RESTAURANT	At University of Pittsburgh GAS cooks for Hundreds of Student Soldiers.
RESTAURANT MANAGEMENT	Better cooking and baking results today and tomorrow through GAS research.
HOTEL MANAGEMENT	
INSTITUTIONS	
School Field	
NATION'S SCHOOLS	At University of Pittsburgh GAS cooks for Hundreds of Student Soldiers.
Hospital Field	
MODERN HOSPITAL	Better cooking and baking results today and tomorrow through GAS research.
Food Processing	
FOOD INDUSTRIES	For a head start on the field. . . . Plan on GAS when Modernizing.
Baking Field	
BAKERS HELPER (Oct. 7)	At Harvard . . . America's oldest university . . .
BAKERS WEEKLY (Oct. 16)	GAS cooks and bakes for student soldiers.

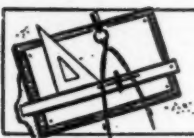
Industrial Gas Meeting at Metal Congress

THE annual Industrial Gas Breakfast and meeting at the National Metal Congress will be held by the Industrial and Commercial Gas Section of the American Gas Association at Hollenden Hotel, Cleveland, Ohio, on Wednesday, October 18, at 8:30 A.M. All gas men and equipment manufacturers who will be at the National Metal Congress are invited to attend.

A valuable program that will extend through the morning has been arranged. Outstanding heat-treaters and others will take part in this program. The meeting will adjourn in time to allow for attendance that day at the National Metal Exposition where leading industrial gas equipment manufacturers will display.

GAS PROCESSING FUTURE

"At the present moment, the brightest future in processing appears to be opening up to methods which permit more rapid heat transfer, reduction in space for equipment, more precision in control and a reduction in capital investment in equipment. All of these requirements promise ever-widening usefulness for radiant gas burners."—CARL P. MANN.



Technical SECTION

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A. GORDON KING, *Secretary*

Carburetted Water Gas as a Substitute for Coke Oven Gas

By O. W. BARENSCHER

Gas Engineer, Wisconsin Public Service Corp., Sheboygan, Wis.

A SUITABLE substitute for coke oven gas can be produced in a water gas machine. This was demonstrated last fall when the Wisconsin Public Service Corporation was faced with the problem of producing a substitute gas in the standby water gas plant.

It became necessary when the only producer of the coke oven plant was shut down for repairs and a third of the oven gas was required for underfiring. It was a problem because the standby water gas plant is located about two miles from the oven plant and facilities are not available for mixing the two gases in substantial amounts prior to distribution. The water gas must be pumped directly to the distribution system serving the main business district and residential customers in the vicinity of the water gas plant. The substitute gas must therefore be a 100% substitute for the coke oven gas which is of 520 B.t.u. and 0.5 specific gravity.

Together with L. J. Willien, then of the Public Utility Engineering and Service Corporation, a study was made of the many methods which have been proposed or used to make various kinds of substitute gases in a water gas machine and included such methods as:

1. The low gravity water gas process, or the process of using oil on the back-run together with the steam to produce a gas which would have a gravity and flame characteristics similar to the oven gas.
2. The use of oil on the back-run, but without the use of steam, a method which was proposed by Mr. Willien several years ago.
3. The method developed by The Peoples Gas Light & Coke Co. of Chicago, or the cracking of oil at high temperatures (1700-1800° F.) to produce a 550 B.t.u. oil gas which is very similar in composition to oven gas.
4. The production of regular water gas, but of a B.t.u. sufficiently high to compensate for the increased gravity such that the gas would burn satisfactorily in an appliance adjusted for the oven gas.

After a careful study of those various possibilities, it was decided to produce the

regular, higher B.t.u. water gas, the main reasons for which were:

1. The water gas machine and auxiliary equipment could be used without making any alterations or additions.
2. There would be less possibility of getting into operating difficulties such as carbon troubles within the set, or carbon and heavy tar stoppages in the wash box, condensers, and scrubbers.
3. Less experimenting would be required to produce the desired gas; that is, if our conclusions were correct that a gas of a certain B.t.u. for a given gravity could be produced that would burn satisfactorily in appliances adjusted for the oven gas, and that therefore, the question of flame characteristics could be ignored.

Having decided on the method the next problem was that of determining the most likely B.t.u. and gravity gas to produce. For this determination use was made of the mixed gas equation developed by Frank Knoy, Combustion Engineer, Municipal Gas Company, Long Beach, California. The equation is,

$$\frac{H - 175}{\sqrt{G}} = C \quad (1)$$

wherein

H = Total heating value of the gas

G = Specific gravity (air = 1)

C = A constant

175 = B.t.u. of the primary mixture of an atmospheric burner.

Another equation which was made use of was that which expresses the well known relation between the flow of gas through an orifice and the momentum of the gas stream to its specific gravity or as is sometimes expressed:

$$\frac{H}{\sqrt{G}} = C \quad (2)$$

wherein

H = Total heating value of the gas

G = Specific gravity (air = 1)
C = A constant

It was not known with certainty as to what might be the specific gravity of the water gas at the higher B.t.u. and it was considered inadvisable to make any attempt to control both the B.t.u. and gravity to any specific figure. It was considered more practical to produce a water gas with a minimum of inerts and crack the oil at the most optimum temperature, and then control the oil input to produce a B.t.u. which would conform to the given gravity to give the desired substitute gas. With this in mind a chart of control curves was prepared as shown in Figure I.

Just in case there might be some doubt as to how it was prepared, let us illustrate using equation, (2).

First solve for C, using the oven gas figures, or

$$\frac{520 - 175}{\sqrt{0.50}} = C \text{ or } 488$$

Then using the value of C, substitute given specific gravity values and calculate for H, as for instance, using 0.7 gravity and solving for H, we have:

$$\frac{H - 175}{\sqrt{0.7}} = 488 \text{ or } H = 583$$

These two figures or 0.7 gravity and 583 B.t.u. determines one point of curve (2).

While both curves were used as a guide to determine the most suitable substitute gas, the significance of the two is quite different. Substitute gases conforming to curve (1) give constant B.t.u. and primary air input to the burner, while substitute gases conforming to curve (2) give a primary mixture to the atmospheric burner which is constant at 175 B.t.u.

A representative group of appliance burners were also used as a guide in producing a suitable gas.

Substitute Gas Produced over a Period of Three Days

Producing a gas, the B.t.u. and gravity of which when plotted on the chart, fell somewhere on or between these two curves, performed satisfactorily in burners adjusted for the coke oven gas. The B.t.u. of the gas produced varied between 580 and

Presented at Joint Production & Chemical Committee Conference, Technical Section, American Gas Association, New York, N. Y., June 6-7, 1944.

630 and the gravity between 0.68 and 0.70. The average was around 600 B.t.u. and 0.69 gravity or a gas which came closer to meeting the requirements of curve (1). Utilized in a burner adjusted to give a primary mixture of 175 B.t.u. with the oven gas, a substitute gas of this average gravity and B.t.u. would have 181 B.t.u. for the primary mixture.

This substitute gas was produced over a period of three days and from about 10:00 A.M. to 4:00 P.M. of each day it was pumped into the distribution system without any mixing with the coke oven gas. During this test not a single complaint was received which could be attributed to the substitute gas.

For this initial operation we purposely produced a gas which it was felt might be too high in B.t.u. and thus possibly cause a yellow flame. We preferred to have this situation than the possibilities of too low a B.t.u. and flash back troubles. Actually the gas as used by the customer may have had a B.t.u. which conformed more closely to curve (2) than indicated, for most of the B.t.u. tests were made at the storage holder inlet and considering the illuminates in the gas there could have been an appreciable loss in B.t.u. by the time the gas reached the customers' appliances. The average B.t.u. of the primary mixture of customer appliances may have been very close to 175 B.t.u. or a figure which would confirm tests made some years ago. In 1922 the Bureau of Standards in

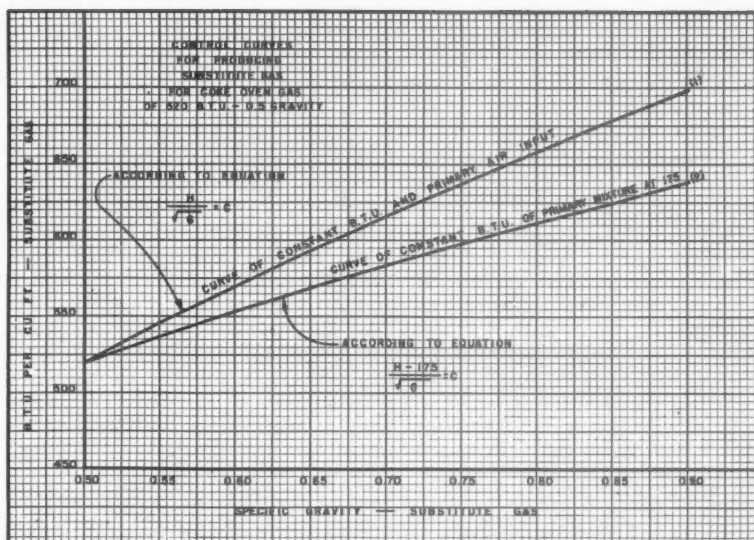


FIGURE 1

tests revealed that for coal or water gas in the range of 500 to 600 B.t.u. that a primary mixture of 175 B.t.u. in the burner head gave the best results.

For future operations of the water gas plant, a chart will be prepared with constant primary mixture curves of 175, 180, and 185 B.t.u.s. and then a substitute gas will be produced which will be between

the limits of these curves. The equation $\frac{H}{\sqrt{G}} = C$ will not be used.

$$\sqrt{G}$$

Operating Procedure

For the benefit of those who might be interested, I shall relate some of the experiences in operating the seven foot back-run water gas machine used to produce the substitute gas.

In bringing a cold machine up to oil cracking temperatures it is our usual procedure in producing a 520 B.t.u. gas to make several blind runs (runs without oil injection) in order to avoid overheating the generator and to transfer excessive heat from the top of the carburetter to the base of the carburetter and superheater. Operating in this manner for the production of a higher B.t.u. gas, however, might lead to trouble because of the difficulty in subsequently producing ample oil gas to enrich the blind run gases. Therefore, to avoid such a possibility, the blind run gases in this case were vented to the stack. While it is true other methods can be used to prevent overheating, none are considered to be as positive as the blind run.

When the carburetter was considered to have sufficient heat to crack oil, as indicated by observation through the carburetter sight cock, a series of short up runs were made starting with about one fifth the usual amount of oil, and a run of sufficient length to inject the oil and give ample time for the oil purge. As the amount of oil injected was increased so also was the length of the run increased. This method of operation aids considerably in transferring heat over to the superheater. During this period of operation some steam was used during the blast periods to prevent overheating of the generator and to help heat the cracking chambers. It

ESTIMATED WATER GAS OPERATING RESULTS

	Make	Runs	Make/Run	Oil/MCF
October 26	100	28	3600	3.74
" 27	195	60	3250	4.20
" 28	225	57	3940	3.75
Total or Ave.	520	145	3600	3.92

Make per hour—40 to 50 MCF

After the machine was up to temperature, it was estimated generator fuel requirements amount to about 40 lbs. per MCF.

GAS ANALYSIS

	Sample Taken from Outlet of Purifiers* Oct. 29th	Sample Taken 10:00 A.M. to 10:30 A.M. Oct. 28th	Typical Coke Oven Gas Analysis†
CO ₂	3.6	3.1	1.9
H ₂	10.9	13.1	3.5
O ₂	0.9	1.9	0.6
CO	27.5	27.5	9.8
CH ₄	14.3	15.5	24.3
H ₂	34.5	29.6	44.2
N ₂	8.3	9.3	15.7
B.t.u.	598 (Taken on Thomas)	—	520

* While gas which remained in relief holder from previous day was being purified and pumped to storage holder.

† Coke oven gas is a mixture of the oven gas with producer gas to produce a 520 B.t.u. mixture. The mixture is estimated to be composed of 17% of 130 B.t.u. producer gas and 83% of 600 B.t.u. oven gas.

also holds down the production of blue gas and therefore makes it easier to initially produce a higher B.t.u. gas.

After the machine was up to temperature the cycle which appeared to produce the best results was as follows:

2 minutes—Average blast period
2 minutes—Uprun with 13 to 16 gallons oil and 40 lbs. steam per minute
2¾ minutes—Average blast period
2 minutes—Uprun with 13 to 16 gallons oil and 40 lbs. steam per minute
3 minutes—Backrun with 40 lbs. steam per minute
¾ minutes—Final uprun and purge.

It will be noted the complete cycle involves two blast periods and two runs, one with a three minute back-run and the other without a back-run. The oil pump and spray equipment was arranged for producing 520 B.t.u. gas or an oil rate too slow for producing a 600 B.t.u. gas. When operating the machine in the usual manner with about 50% back-run steam there was difficulty in keeping up the B.t.u., and if the back-run was shortened to bring up the B.t.u., the generator hot zone could not be held down near the grates or clinker zone. By making a back-run every other run, excellent generator fire conditions could be maintained and at the same time maintain the desired B.t.u. It seems one long back-run is more effective than several short back-runs in conditioning the generator fire.

After the machine was well up to temperature, operating within a temperature range of 1450 to 1500° F. attained the most satisfactory oil cracking results. The thermocouple was located in the lower courses of the superheater checkerbrick. It takes quite a few hours to attain full operating temperatures and trowel tests taken of gases from the top of the superheater or examination of the tar at the wash box overflow must be frequently made to assure proper oil cracking.

Future Production of Substitute Gas

In this initial operation coke was used for generator fuel and gas oil for carburization. In future operations, some coal will be used as generator fuel, for with a machine of this size there should be no difficulty with coal, and its use should make it easier to maintain oil cracking temperatures and keep up the B.t.u.

Experiments will also be conducted in using a moderate amount of oil on the back-run to make some reduction in the specific gravity and consequently a reduction in the B.t.u. It is realized that as more substitute gas is required it will be more economical to produce a lower gravity gas that will permit a lower B.t.u.

APPENDIX

Gas Plant Equipment, Sheboygan, Wis. Coke Oven Plant

Koppers, Becker-type plant in one battery of 15 ovens. Rated capacity 1,500,000 cu.ft. per 24 hrs. based on a charge of 4.08

tons of coal per oven, 12 hour coking time, and dilution of the oven gas to 520 B.t.u. with producer gas.

1,500 MCF storage holder.

Water Gas Plant

Seven foot back-run water gas set. Except for steam and oil, valves are hydraulically equipped for manual operation.

50 MCF relief holder

200 MCF storage holder

Koppers' Book Gives Coke Oven History

WITH the publication of a handsomely bound and beautifully printed book, the Koppers Company recently made a splendid contribution to the history of the gas industry and at the same time commemorated the fiftieth year of operation of byproduct coke ovens in America.

This book traces the evolution of the byproduct coke oven from early coking methods, through beehive ovens, horizontal- and vertical-heating-flue byproduct ovens to the development of old and new Koppers ovens. Descriptive text is kept at a minimum but the pages abound with large clear cross-sectional diagrams and photographs of old and new equipment in operation.

The chronicle relates how Heinrich Koppers in 1900 introduced the conventional "gas-gun flues" with ceramic gas nozzles for apportioning the fuel gas among the flues of batteries provided with longitudinal regenerators. The same year he introduced the sliding brick in the horizontal flue as a means of controlling the draft in each vertical flue.

In 1904, only five years after building his first ovens, Koppers discarded the longitudinal regenerators common to an entire battery and introduced cross-regenerators for each individual oven wall. This revolutionary improvement in the design of coke-oven regenerators has since become the fundamental basis of all coke oven design.

The book proceeds to set down the important events and initial operation dates of innovations in oven design with which the present Koppers Company and its predecessors have been intimately associated. According to this narrative, the first Koppers ovens in this country were built for the United States Steel Corporation at Joliet, Illinois, in 1907. The installation consisted of four batteries comprising 280 cross-regenerative ovens. Developments from here on are depicted not only by text but by colored drawings and full page pictures of some of the thousands of Koppers plants installed throughout the world.

Students and historians of the manufactured gas industry will be richly rewarded by a study of this book.

U.S. To Build Synthetic Fuel Plants

THE Bureau of Mines soon will send engineering survey parties into the field to examine potential locations for synthetic liquid fuel laboratories and demonstration plants, Secretary of the Interior Harold L. Ickes announced Sept. 17.

Authorized by the Synthetic Liquid Fuels Act, these laboratories and plants will conduct a five-year program of research and development to provide the "know how" for private commercial production of oil and gasoline and other petroleum-like products from the Nation's immense reserves of coal, lignite, oil shales, and agricultural and forestry products.

More than 150 different site proposals have been submitted to the Bureau of Mines, Secretary Ickes disclosed. Careful and thorough consideration is being given to the qualifications of each of the many suggested sites, which represent nearly all the coal-producing states, he stated.

The actual locations will be determined by such factors as the oil yields and processing properties of raw materials in the area, cost and topography of the land, proximity of towns or cities and housing facilities, nearness of industries offering needed services, climatic conditions, and the availability of transportation, electric power, water, steam and natural gas. The field surveys, to check these factors, will follow a careful study of available laboratory information and an exhaustive examination of the briefs and exhibits presented in support of various site suggestions.

Gas Men Speak at Chemical Meeting

SEVERAL papers of interest to the gas industry were presented September 14 in New York before the Division of Gas and Fuel Chemistry of the American Chemical Society.

C. George Segeler, utilization engineer of the American Gas Association, presented a paper prepared jointly with F. E. Vandaveer, of the A. G. A. Laboratories staff, on "Partial Combustion of Gas with a Deficiency of Air."

V. I. Komarewsky and C. H. Riesz, both of the Institute of Gas Technology staff, collaborated in a paper entitled "Fischer-Tropsch Synthesis and the Gas Industry."

Guenther von Elbe and Morris Mentser, U. S. Bureau of Mines, Pittsburgh, described studies of the structure and stability of burner flames.

Chemical characteristics and carbonization of coal were also discussed by several speakers. Gilbert Thiessen, The Koppers Co., Pittsburgh, was chairman of the meeting.



New Design Technique Produces Tailor-made Flame Characteristics

By H. J. HENSE

*American Gas Association
Testing Laboratories*

FIRSTHAND knowledge of the dynamic impetus primary air injection has given the modern process of gas combustion is possessed by anyone who has ever made a simple air shutter adjustment. As the flame progresses from a soft yellow with little or no primary air entrainment to a sharp, clear, efficient blue as the correct amount of air is reached, the magic-like transition is an ever-recurring reminder of Bunsen's contribution to the gas industry in discovering the advantages of premixing gas and air before burning.

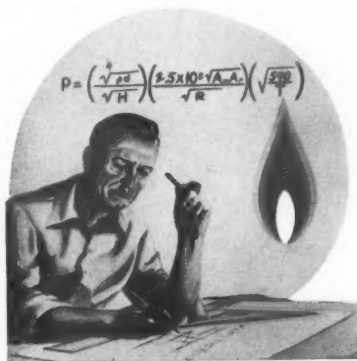
Vast design strides have been made since Bunsen first introduced a small opening in the base of a straight tube to burn gas so that today the Bunsen type burner has attained a high level of efficiency and performance. Nevertheless, until recently it has never been possible to calculate scientifically and accurately in advance the percentage of primary air a proposed burner is capable of injecting.

Design Gap Bridged

This important gap in design technology has now been bridged and such a calculation becomes possible for the first time with completion of a comprehensive research investigation by the American Gas Association Testing Laboratories. Issued as Research Bulletin No. 26, "Primary Air Injection Characteristics of Atmospheric Gas Burners," this new publication represents an important contribution to the extensive program of gas burner research supervised by the Association's Committee on Domestic Gas Research.

The method of calculation sets up a new

relationship for most of the variable elements entering into burner design and reduces them to a mathematical formula. Its



Gas burner primary air entrainment formula

usefulness and significance extends beyond mere air entrainment calculation, for together with other data previously published by the Laboratories and further developed in connection with this investigation, it establishes a logical starting point for designing atmospheric burners.

A new flexibility of design results which breaks the limiting shackles of charted

ratios used to approximately balance design components for satisfactory air entrainment. A detailed technical review of the method presented in Bulletin 26 has been enthusiastically received by designers and manufacturers. Comments by members of the industry likewise have been excellent, some stating that the bulletin is one of the best ever distributed on burner technology.

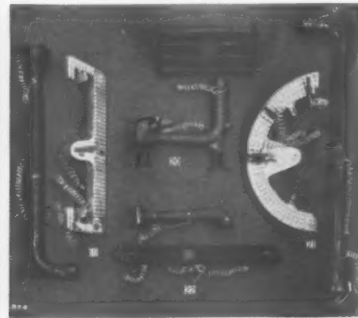
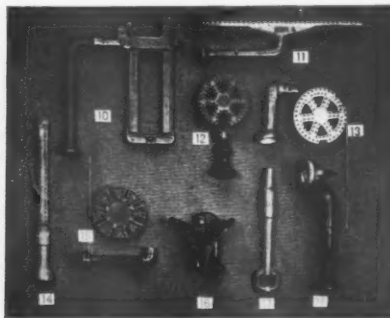
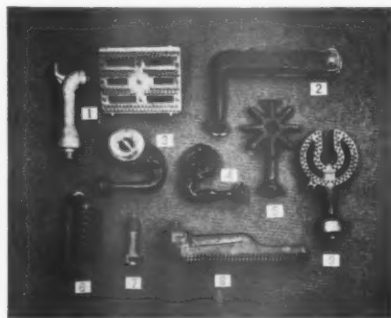
New Flexibility Gained

The new flexibility of design offers two distinct advantages:

First, it liberates present restrictive rules for attainment of satisfactory air entrainment, replacing an unknown quantity with the exact amount of air which actually will be injected as determined by calculation. While formerly it was possible to obtain satisfactory premixing of gas and air on an approximate basis, it is now possible to start with very definite and desired flame characteristics and to design for them directly by application of the new formula.

Secondly, in a much broader sense the new flexibility helps to more adequately meet some of the problems of designing for certain operating conditions. This is for the reason that ability to design for a specific primary air flow makes possible provision of maximum flexibility for meeting variations in fuel supply within limits such as may occur in normal practice.

Selection of appropriate technical design values for proper performance under widely varying conditions of practical ap-



Typical burners used to verify primary air entrainment formula

plication naturally remains a difficult problem. Consequently, it has been generally recognized as desirable to design for maximum air flow and to reduce the amount of air aspirated for specific installations by use of air shutters or similar means. Once values have been selected, however, the designer not only can accurately plan the desired air flow in advance, but vary other design elements to a greater degree than formerly, thus attaining his objective more easily and more accurately. In addition he can, by varying burner design, better accommodate other construction and styling factors.

An ideal basis for matching primary air injection and related flame characteristics in burner design is governed by three

selecting a suitable percentage value of primary air for a special application, and modifying this value so that reasonable variations in gas composition may be accommodated. It seems probable that future developments, such as exhaustion of natural gas fields in certain sections of the country and availability of by-product gas from synthetic rubber plants, may make necessary utilization of fuels with more divergent chemical and physical characteristics than has previously been the case. Anticipation of such developments by proper provision in burner design accordingly appears the better part of good judgment.

Derivation of the new equation which is of an empirical nature was based on ex-

the fuel gas on which the burner is to be operated includes as variables the pressure at which the gas is supplied, its specific gravity and heating value. The second representing the physical design of the burner incorporates as variables the average area of the throat and mixer tube outlet, the total area of the burner ports and the input rate which the burner must accommodate. The only variable in the third factor is the temperature of the air-gas mixture in the burner head.

Altogether in this formula more design variables are included than it has been possible to take into consideration heretofore. While detailed discussion of the formula cannot be undertaken here, it will be readily evident these three factors constitute a logical segregation of thought and of orderly design procedure.

Primary Air Injection Characteristics

Major conditions governing primary air injection characteristics were found to be total port and average mixing tube areas together with input rate. Experimental results obtained with various throat to port area ratios disclosed that with the method of calculation employed, throat to port area ratios approximately within the limits of 0.20 to 1.0 can be considered adequate for design purposes for either natural or manufactured gas. In this case the percentage of primary aeration remains the same for a given value of the equation factor covering the physical design of the burner. In other words the principal design factors may be varied within the limits noted for attainment of a specific percentage of aeration. An interesting aspect of the investigation was the discovery that better results were obtained by using the average of cross-sectional areas of the mixing tube from throat to outlet of tube instead of the throat area. This plan resulted in closer agreement between observed and calculated values of primary aeration.

Specific data given in the bulletin shows the flexibility in design which can be incorporated to produce the same result. An example is given for combustion of an amount of gas equivalent to 10,000 B.t.u. per hr. with 60 per cent primary aeration. With a low throat to port area ratio and low input rate per sq.in. of port area, short flames and good heat distribution over a relative large area are readily obtainable. On the other, with a larger throat to port area ratio and greater input per unit port area, longer flames and higher heat concentrations would result. Burner design data for these two extremes and for intermediate values showing the range of flexibility possible are presented in tabular form.

Selection of variables of burner design naturally must be matched to flame characteristics produced by different gases under various conditions. Slow-burning natural gases usually present a limiting condition to the amount of gas that can be burned due to their propensity to lift from ports. On the other hand, with fast-burning



Determining air injecting characteristics of gas burner mixing tubes

principles. First, the burner should be so designed and rated that flame stability on any gas with which it is to be used will be obtained with the highest primary air injection possible. Second, the burner should be capable of this degree of air entrainment under the most unfavorable conditions of gas pressure and burning characteristics contemplated. Third, it should perform properly without readjustment on gases of different chemical and physical characteristics or under varying pressure conditions.

Quite naturally, considerable departure must be made from ideal principles in specific applications for the sake of other objectives. They are, however, goals toward which to work and the new development of a means of calculating air injection is another step towards their fulfillment in practice.

From a practical standpoint the information presented in Bulletin No. 26 gives the means of achieving a predetermined degree of primary air entrainment,

tensive studies with a number of test burners. It was verified by calculating and then experimentally determining the exact primary air entrainment of twenty-four contemporary commercial burners. In most instances the two results obtained were within 3 per cent. New data obtained are correlated with information on essential performance characteristics of burners published in previous bulletins on gas burner research sponsored by the Committee on Domestic Gas Research as well as results of certain studies contributed by the National Bureau of Standards. Such portions of previous bulletins as are vital to the new work and its use in illustrating and explaining the correlation of the formula and fundamental concepts of design are abstracted, thus bridging the past work and the new.

Under the new formula reproduced in the accompanying illustration, percentage of primary air required in a specific instance may be expressed as the product of three separate factors. The first relating to

manufactured gases, the air injecting ability of the burner usually limits the amount of gas which can be burned. These factors are discussed in detail.

Previous publications of this series such as bulletin No. 10, "Research in Fundamentals of Atmospheric Gas Burner Design," and Bulletin No. 13, "Fundamentals of Design of Atmospheric Gas Burner Ports," discuss properties of burners to insure desirable flame characteristics. Additional data is provided by the new bulletin on such design factors as avoidance of yellow tips, inner and outer flame cone heights, and treatment of noise of extinction. Besides the extensive data on the principal factors of design, other features are discussed and the limits of their effectiveness determined.

As a new treatise in the literature of burner design and the development of empirical relationships which have gradually been built up since the Fundamental Research Program was first introduced in 1935, Bulletin No. 26 greatly aids the problems encountered by designers and manufacturers. From this standpoint it is one of the most significant of the series published on the subject. Together with its five companion bulletins, they give the gas industry a scientific approach to burner design and for the first time make it possible to design in advance for definite flame characteristics by taking advantage of relationships clearly established.

GAS PLANT SAFETY

(Continued from page 401)

grizzlies without locking the switches, posting signs and obtaining the department foreman's approval.

With three man trolley bridges and one stacker handling coal and coke, there is considerable exposed collector rail that must be guarded against. Signs, lights and the use of paint were not sufficient to caution against coming in contact with these collectors. While cleaning the coke stacker an operator came in contact with the live collector angles which resulted in a very serious accident. A survey was made of all exposed collectors throughout the plant and to prevent a repetition of this accident steel guards were installed on all machines which would prevent contact.

When working between the coal and coke stock piles it was rather difficult to hear the regular alarm indicating that the bridge was about to be moved. Several narrow escapes from injury indicated that the present alarm was insufficient and something more positive would have to be installed. The investigating commit-

tee recommended the installation of an electric horn which would be sounded when the bridge was about to be moved. Since installing this new horn there has been no further complaint.

A recent burn suffered by the bridge operator, who stuck his finger into the interlock plug controlling the bridge movement, indicated that the plugs in use could cause accidents if the operator became careless.

To avoid further accidents the circuit was re-arranged and a normally off-position push button was installed in series with the controller. Now the operator is always handling a dead plug.

In the generator house there is always the potential hazard of asphyxiation, explosion and fire. The men in this department are carefully trained in the procedure of starting up and shutting down of carburetted water gas sets and waste heat boilers.

The importance of having the right man properly trained for the job cannot be too highly stressed. Just recently a very serious accident was narrowly avoided because an inexperienced man had started to open the clean-out door of a generator set that was still in operation.

Men have been burned and seriously injured because proper precautions had not been taken in the opening of wash boxes. No one is allowed to work inside of a wash box unless it has been thoroughly purged, sealed off and tested for gaseous condition.

In every case where men have to enter apparatus that has contained

inflammable gas, precautions are taken to make sure that there is positive isolation against any leakage of gas back into the apparatus and that the atmosphere is non-toxic.

No safety program, no matter how extensive, can be successful unless it receives the full support and cooperation of management, supervision and employee. The effort must be continuous and the results are based upon how thoroughly we acquire the safety habit.

Good-Bye to Gas Lighting

(The Gas Times, London, August 19)

IS it really worth while to talk of gas lighting in these days? A few years ago it certainly was and at that time I did all that I could to get action; but without result. Now it is far too late to start out to save the lighting load, and surely everybody in the industry knows it. That is not to say that there will be no lighting load for a time; but it will mainly be provided by the people who cannot afford to change over.

I hold that the gas industry was strategically and tactically wrong; but it is no use crying over spilt milk, so I suggest that, having spilt the milk, we set out to forget all about it and get on to something that is still in the bottle! I know only too well that gas lighting could be made very good and that the loss of the lighting load will be a blow to some of the smaller gas undertakings, but they would be well advised to cut the loss and get busy in other directions rather than repine. There has been no major development in gas lighting for over thirty years and that is a sign that it has shot its bolt; though I still think that we might have had those major developments had we set out to seek them. But what might have been does not count.

Home Builders To Cast Aside Display Traditions

SOMETHING unique in convention display, a streamlined postwar exhibition without booths and preferred locations, where all manufacturers' displays are planned and harmonized by a professional designing firm, will be held January 15-20 in Chicago by the National Association of Home Builders. In the past exhibitors had to create their own backgrounds themselves.

The exhibit will show what home building materials and equipment will be available when restrictions are relaxed and will try to dispel confusion about the postwar home.

Six large-scale model homes, winners in a competition held among association members, will be on display. These will be farm, city, suburban, industrial worker, summer, and "home-for-two" type houses.

There will be Convention Gardens (with real grass) where prospects and manufacturers' representatives may get away from the distractions of the exhibits themselves. Printed matter will be distributed in a literature room; none will be permitted at the displays.

Instead of sitting in rows of chairs in the convention hall, the builders will be at round, glass-topped tables, with display materials on them or under the glass.

HOME SERVICE GROWS

(Continued from page 422)

didn't surprise us to learn from advertising that one of the big improvements planned is the elimination of the kitchen. The question was, Where? All over the house it appears."

Postwar kitchen planning has given sway to every trick of the imagination, and we are glad the gas industry has set up a well-thought-through plan of coordination. In their planning, home service has a part. For actual operation it may be, as is done in this California area, the function of a special department. In most companies, it will probably be supervised by home service, and in many departments the plan of operation will be theirs, with sales doing the selling job. In all departments, *promotion* of a well-arranged modern gas kitchen will be a responsibility of home service.

In the operation of kitchen planning, time for the work and sufficient personnel should be carefully considered by sales managers. It just can't be dropped kerplunk without that planning. Home service will return to their demonstrations, more home calls than ever, radio, and follow through on wartime community contacts, and, since nothing takes so much time and thought as planning new and old personalized kitchens, allocation of time *must* be considered. In kitchen planning, I wish we could work out a joint project as successfully as was done in nutrition.

Executive Support

It meant much to home service and to the success of the nutrition program in our companies to have the support of the sales managers and other executives. Now, couldn't kitchen planning be studied together, and isn't it logical now before the postwar rush gets started, to have a training course together? The Public Service Company of New Jersey is planning such a course, and among the manufacturers I know Servel has plans under way. There are no kitchen planning courses as such, in college courses of home economics nor even in architect's courses. Training, therefore, within the company is the answer, with the pooling of information from various fields.

This training program fits into the general need for training courses, which is my next point for consideration. Oliver Wendell Holmes once said, "Knowledge, like timber, needs much seasoning." It is increasingly important that a comprehensive seasoning process is essential to successful home service work. We have had lots of new people in home service since the war started who need definite information on the company itself and the right attitude toward rendering service on sales of fuel and equipment. Refresher work to get back into a sales-minded world is needed for the experienced girl. I was glad to learn of this very plan considered in the Southern Counties Gas Company where,

for a week in August, home service representatives met together in a review work shop.

Many companies are working on training courses between sales, service, and home service right at this moment. Could the postwar provide us our much-to-be-desired goal of the Eternal Triangle where the three do everything interchangeably in actual operation, all in the interest of "better service for the customer"? In other words, "telling the same story." You know, one of the hardest jobs of service men and home service is to live up sometimes to the fine stories told by the sales organization, when in the home of a customer they hear what she has to say. One time, a woman complained because her steak burned on one side in the broiler, and when asked why she didn't turn it over, she said, "Well, the salesman told me this range was completely automatic."

The A. G. A. Committee Appliance Installation and Service Manuals tells me that many companies have found very helpful in meeting the current manpower shortage of service men, the assistance which home service has given in demonstrations on the care of equipment in the school laboratories, for the youngsters in turn to pass on at home. On the efficient use of equipment depends the perfect result looked for in school instruction. Schools, therefore, appreciate this special service and so in the postwar we believe it will continue in importance.

I mention just briefly one of the most important war jobs—the rejuvenation of the home call. The rationing of tires and gas was responsible for a reduction in calls, but its home acceptance will cause it to be back in full-time operation as soon as possible.

The statement of sales policies to be recommended to the gas utility companies by the Executive Board of the American Gas Association included in its twelve points the statement, "that home service and all other aids maintained by the gas utility should be made available to co-operating gas appliance dealers." With that plan, comes the green light for continuance of home calls on dealer sales for new equipment. This assistance of the utility's home service department is most convincing proof of the company's sincerity. We have been told now and then that through this service has come about a raising of the quality of merchandise sold by dealers.

Conclusion

From this summary of postwar plans, I believe you can see that our principal postwar job is our service to the company. In all this, home service can do the best job when it knows its company's plan and its problems—how it would be affected by competition, shifts in population and market changes.

In markets for instance, we hear that

the laundry and its equipment has aroused top interest. A constant complaint I understand is that there is not enough hot water available in the average home for all the usual hot water needs and now to "put out a wash." There is a new stimulus for water heater promotion.

The booming vogue for frozen foods is a new market trend which will take experience and trial to best answer questions of women who will expect home service to have all the answers—know how to bake the frozen pies and how to prepare a frozen leg of lamb without it tasting like a steamed pot roast.

To do all this, we will have more and bigger home service departments. Perhaps I have overshot the mark. I would rather do that, explaining the plan, than break the resistance of someone who says later on, "Well, I didn't know we would need so much." I have tried the tactics of General Patton in France, gone ahead maybe of supply, or run off the map, or both, but I am sure the gas industry, on the basis of our war record and our postwar plans, feels that it cannot afford to get along without more home service and will not just take it for granted!

Personnel Service

POSITIONS OPEN

Operating Superintendent for natural gas company serving small district in Eastern Kansas. Experience in gas measurement, distribution and well operation desirable. Permanent position for qualified man. Give record of experience and other pertinent information. 0394.

Time Study Engineer—Exceptional opportunity to make a permanent connection with one of the outstanding gas range manufacturers of the country. Must be thoroughly trained and experienced in motion analysis, work simplification and setting standards for piece work purposes. Work consists of sheet metal, enameling, and assembly of ranges—fabrication, heat treating and assembly of aluminum parts for aircraft. 0395.

Exceptional opportunity for permanent position with one of the major gas range manufacturers. Must be experienced in **gas range design** and product development. Must have the ability to coordinate design problems, performance requirements, with field problems and production operation. Must be graduate engineer. Give complete details as to qualifications, age, experience, education. 0396.

We are in need of a **manager** for one of our plants, high pressure, water gas with a maximum sendout of half million per day. 0397.

Development Engineer—Permanent position to man having the following ability, experience in gas appliance design, familiarity with A. G. A. testing procedures, knowledge of production, operation and development. Give complete details as to personal qualifications, age and experience. 0398.

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Executive with many years experience in gas range manufacturing, sales, purchasing, merchandising, analyses. Experience also covers operation and management of bottled gas companies. Member A.E.F. World War I. Available at once. 1484.

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